THE INTERNATIONAL FRAGRANCE ASSOCIATION

THE COMPLETE IFRA STANDARDS

UP TO AND INCLUDING THE 50TH AMENDMENT

JANUARY 2022

50

Index of IFRA Standards – 50th Amendment

Key to types of Standard

P = Prohibition R = Restriction S = Specification

α-Bisabolol	515-69-5 23089-26-1 23178-88-3 78148-59-1 76738-75-5 72691-24-8	R	2020	**89**
Bitter orange peel oil expressed	68916-04-1 72968-50-4	R	2020	**94**
Boldo oil	8022-81-9 84649-96-7	P	2009	**98**
Bromostyrene	103-64-0	P	2008	**102**
3-Bromo-1,7,7-trimethylbicyclo[2.2.1]heptane-2-one	76-29-9	P	2008	**100**
α-Butylcinnamaldehyde	7492-44-6	R	2020	**104**
p-tert-Butyldihydrocinnamaldehyde	18127-01-0	R	2020	**107**
p-tert-Butyl-α-methylhydrocinnamic aldehyde (p-BMHCA)	80-54-6	R + P	2020	**110**
p-tert-Butylphenol	98-54-4	P	2006	**114**
3-(m-tert-Butylphenyl)-2- methylpropionaldehyde (m-BMHCA)	62518-65-4	R	2020	**116**
Cade oil	8013-10-3 90046-02-9	P + S	2013	**119**
Carvone	99-49-0 2244-16-8 6485-40-1	R	2020	**124**
Carvone oxide	33204-74-9	P	2004	**122**
Cedrene	11028-42-5 469-61-4 546-28-1	R	2020	**129**
Chenopodium oil	8006-99-3 8024-11-1 89997-47-7	P	2008	**134**
Cinnamic alcohol	104-54-1	R	2020	**136**
Cinnamic aldehyde	104-55-2	R	2020	**143**
Cinnamic aldehyde dimethyl acetal	4364-06-1	R	2020	**140**
Cinnamylidene acetone	4173-44-8	P	2008	**150**
Cinnamyl nitrile	1885-38-7 4360-47-8	R	2020	**147**
Citral	5392-40-5 141-27-5 106-26-3	R	2020	**152**
Citronellal	106-23-0 5949-05-3	R	2020	**159**
Citronellol	106-22-9 1117-61-9 26489-01-0 6812-78-8 141-25-3 7540-51-4	R	2020	**164**
Citrus oils and other furocoumarins containing essential oils	Not applicable.	R	2020	**169**
Colophony	8050-09-7	P	2006	**173**
Costus root oil, absolute and concrete	8023-88-9 90106-55-1	P	2006	**175**
Coumarin	91-64-5	R	2020	**178**
Cumin oil	8014-13-9 84775-51-9	R	2020	**182**
Cuminaldehyde	122-03-2	R	2020	**186**
Cyclamen alcohol	4756-19-8	P + S	1980	**189**
Cyclamen aldehyde	103-95-7	R + S	2020	**191**
Cyclohexanemethanol, 2,4-dimethyl-	68480-15-9	R	2020	**194**

Cyclopentadecanolide	106-02-5	R	2020	**197**
Dibenzyl ether	103-50-4	R	2020	**201**
2,2-Dichloro-1-methylcyclopropylbenzene	3591-42-2	P	2008	**204**
2,4-Dienals	764-40-9 142-83-6 80466-34-8 5910-85-0 30361-28-5 6750-03-4 2363-88-4 13162-46-4 21662-16-8 25152-84-5 30361-29-6 4313-03-5 20432-40-0 4488-48-6 5577-44-6 5910-87-2	P	2013	**206**
Diethyl maleate	141-05-9	P	2006	**209**
Dihydrocoumarin	119-84-6	R	2020	**214**
2,4-Dihydroxy-3-methylbenzaldehyde	6248-20-0	P	2006	**217**
6,7-Dihydro-1,1,2,3,3-pentamethyl-4(5H)- indanone (DPMI)	33704-61-9	R	2020	**211**
4,6-Dimethyl-8-tert-butylcoumarin	17874-34-9	P	2006	**245**
Dimethyl citraconate	617-54-9	P	2006	**219**
Dimethylcyclohex-3-ene-1-carbaldehyde (mixed isomers)	68737-61-1 (mixed isomers) 68039-49-6 68039-48-5 27939-60-2 67801-65-4 36635-35-5 68084-52-6 35145-02-9	R	2020	**247**
1-(5,5-Dimethyl-1-cyclohexen-1-yl)pent-4-en- 1-one	56973-85-4	R	2020	**221**
4,8-Dimethyl-4,9-decadienal	71077-31-1	R	2020	**239**
5,9-Dimethyl-4,8-decadienal	762-26-5	R	2020	**236**
3,7-Dimethyl-2,6-nonadien-1-al	41448-29-7	R	2020	**224**
3,7-Dimethyl-3,6-octadienal	55722-59-3 1754-00-3 72203-98-6 72203-97-5	R	2020	**232**
3,7-Dimethyl-2-octen-1-ol	40607-48-5	P	2004	**227**
2,2-Dimethyl-3-(3-tolyl)propan-1-ol	103694-68-4	R + S	2020	**229**
3,3-Dimethyl-5-(2,2,3-trimethyl-3- cyclopenten-1-yl)-4-penten-2-ol	107898-54-4	R	2020	**242**
Diphenylamine	122-39-4	P	2004	**251**
2,4-Dodecadien-1-ol, (2E, 4E)	18485-38-6	P	2015	**253**
Esters of 2-Nonynoic acid (except Methyl octine carbonate)	e.g.: 10031-92-2	P	2008	**531**
Esters of 2-Octynoic acid (except Methyl heptine carbonate)	e.g.: 10484-32-9 10519-20-7	P	2008	**548**
Estragole	140-67-0 1407-27-8 77525-18-9	R	2020	**255**
2-Ethoxy-4-methylphenol	2563-07-7	R	2020	**259**
Ethyl acrylate	140-88-5	P	2006	**262**

p-Ethylbenzaldehyde	4748-78-1	R	2020	**264**
Ethylene glycol monoethyl ether and its acetate	110-80-5 (ether) 111-15-9 (acetate)	P	2004	**267**
Ethylene glycol monomethyl ether and its acetate	109-86-4 (ether) 110-49-6 (acetate)	P	2004	**270**
Eugenol	97-53-0	R	2020	**273**
Farnesal	19317-11-4	R	2020	**279**
Farnesol	4602-84-0	R + S	2020	**283**
Fig leaf absolute	68916-52-9 90028-74-3	P	2006	**288**
Furfural	98-01-1	R	2020	**290**
Furfuryl alcohol	98-00-0	P	2015	**293**
Furfurylidene acetone	623-15-4	P	2008	**296**
Geraniol	106-24-1	R	2020	**298**
Geranyl nitrile	5146-66-7 5585-39-7 31983-27-4	P	2008	**306**
Grapefruit oil expressed	8016-20-4 90045-43-5	R	2020	**308**
trans-2-Heptenal	18829-55-5	P	2006	**311**
2-Heptylidene cyclopentan-1-one	39189-74-7	R	2020	**313**
2,4-Hexadien-1-ol	111-28-4 17102-64-6	P	2015	**316**
Hexahydrocoumarin	700-82-3	P	2006	**318**
trans-2-Hexenal	6728-26-3	R	2020	**324**
trans-2-Hexenal diethyl acetal	67746-30-9	P	2006	**320**
trans-2-Hexenal dimethyl acetal	18318-83-7	P	2006	**322**
α-Hexyl cinnamic aldehyde	101-86-0	R	2020	**327**
Hexyl salicylate	6259-76-3	R	2020	**330**
α-Hexylidene cyclopentanone	17373-89-6	R	2020	**333**
Hydroabietyl alcohol, Dihydroabietyl alcohol	13393-93-6 26266-77-3 1333-89-7	P	2004	**336**
Hydroquinone monoethyl ether	622-62-8	P	2006	**338**
Hydroquinone monomethyl ether	150-76-5	P	2006	**341**
4-Hydroxy-2,5-dimethyl-3(2H)-furanone	3658-77-3	R	2020	**344**
3 and 4-(4-Hydroxy-4-methylpentyl)-3- cyclohexene-1-carboxaldehyde (HMPCC)	31906-04-4 51414-25-6	R	2020	**347**
Hydroxycitronellal	107-75-5	R	2020	**351**
4-(4-Hydroxyphenyl)butan-2-one	5471-51-2	R	2020	**354**
Isobutyl N-methylanthranylate	65505-24-0	S	2009	**357**
p-Isobutyl-α-methyl hydrocinnamaldehyde	6658-48-6	R	2020	**360**
Isocyclocitral	1335-66-6 1423-46-7 67634-07-5	R	2020	**363**
Isocyclogeraniol	68527-77-5	R	2020	**366**
Isoeugenol	97-54-1 5932-68-3	R	2020	**369**
Isophorone	78-59-1	P + R	2020	**373**
p-Isopropylbenzyl alcohol	536-60-7	R	2020	**383**
6-Isopropyl-2-decalol	34131-99-2	P	2006	**381**

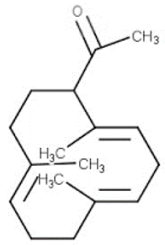
cis,trans-4-(Isopropyl) cyclohexanemethanol	5502-75-0 13828-37-0 13674-19-6	R	2020	**377**
4-(Isopropyl)-.β.-methylcyclohexanethanol	67634-03-1	R	2020	**499**
Jasmine absolute (grandiflorum)	8022-96-6 8024-43-9 90045-94-6 84776-64-7	R	2020	**387**
Jasmine absolute (sambac)	91770-14-8 1034798-23-6	R	2020	**390**
Lemon oil cold pressed	8008-56-8 84929-31-7	R	2020	**393**
Lime oil expressed	8008-26-2 90063-52-8	R	2020	**396**
Limonene	138-86-3 7705-14-8 5989-27-5 5989-54-8	S	1995	**399**
Linalool	78-70-6 126-90-9 126-91-0	S	2004	**402**
Longifolene	475-20-7 16846-09-6 19067-29-9	R	2020	**405**
Massoia bark oil	85085-26-3	P	2008	**409**
Massoia lactone	54814-64-1 51154-96-2	P	2015	**411**
Melissa oil (genuine Melissa officinalis L.)	8014-71-9 84082-61-1	R	2020	**413**
Menthadiene-7-methyl formate	68683-20-5	R	2020	**416**
p-Methoxybenzaldehyde	123-11-5	R	2020	**428**
o-Methoxycinnamaldehyde	1504-74-1	R	2020	**432**
7-Methoxycoumarin	531-59-9	P + R	2008	**436**
Methoxy dicyclopentadiene carboxaldehyde	86803-90-9	R	2020	**419**
4-Methoxy-α-methylbenzenepropanal	5462-06-6	R	2020	**440**
2-Methoxy-4-methylphenol	93-51-6	R	2020	**422**
2-Methoxy-4-propylphenol	2785-87-7	R	2020	**425**
α-Methyl anisylidene acetone	104-27-8	P	2006	**444**
α-Methyl-1,3-benzodioxole-5- propionaldehyde (MMDHCA)	1205-17-0	R	2020	**481**
α-Methyl cinnamic aldehyde	101-39-3	R	2020	**446**
6-Methylcoumarin	92-48-8	P	2006	**495**
7-Methylcoumarin	2445-83-2	P	2006	**497**
Methyl crotonate	623-43-8	P	2006	**449**
4-Methyl-7-ethoxycoumarin	87-05-8	P	2006	**493**
Methyl eugenol	93-15-2	R	2020	**451**
Methyl N-formylanthranilate	41270-80-8	R + S	2020	**469**
6-Methyl-3,5-heptadien-2-one	1604-28-0	R	2020	**490**
Methyl heptine carbonate	111-12-6	R	2020	**456**
p-Methylhydrocinnamic aldehyde	5406-12-2	P	2008	**502**
Methyl ionone, mixed isomers	1335-46-2 127-42-4 127-43-5 127-51-5 7779-30-8 79-89-0 1335-94-0	R + S	2020	**459**
Methyl methacrylate	80-62-6	P	2008	**463**

Methyl N-methylanthranilate	85-91-6	R + S	2020	**473**
Methyl β-naphthyl ketone	93-08-3	R	2020	**465**
3-Methyl-2(3)-nonenenitrile	53153-66-5	P	2008	**485**
Methyl octine carbonate	111-80-8	R	2020	**478**
3-Methyl-2-(pentyloxy)cyclopent-2-en-1-one	68922-13-4	R	2020	**487**
p-Methyltetrahydroquinoline	91-61-2	S	2009	**504**
Mintlactone	13341-72-5	P	2021	**507**
Musk α	63697-53-0	P	2008	**524**
Musk ambrette	83-66-9	P	2006	**509**
Musk ketone	81-14-1	S	2010	**512**
Musk KS	62265-99-0	P	2008	**515**
Musk moskene	116-66-5	P	2008	**517**
Musk tibetene	145-39-1	P	2008	**519**
Musk xylene	81-15-2	P	2009	**521**
Nitrobenzene	98-95-3	P	2006	**526**
2-Nonyn-1-al dimethyl acetal	13257-44-8	R	2020	**528**
Nootkatone	4674-50-4	S	2006	**533**
Oakmoss extracts	90028-68-5 68917-10-2 9000-50-4	R + S	2020	**536**
1-(1,2,3,4,5,6,7,8 Octahydro-2,3,8,8-tetramethyl-2-naphthalenyl) ethanone (OTNE)	54464-57-2 54464-59-4 68155-66-8 68155-67-9	R	2020	**540**
1-Octen-3-yl acetate	2442-10-6	R	2020	**544**
Opoponax	8021-36-1 9000-78-6 93384-32-8	R + S	2020	**551**
1-(2,4,4,5,5-Pentamethyl-1-cyclopenten-1- yl)ethan-1-one	13144-88-2	R	2020	**555**
2-Pentylidene cyclohexanone	25677-40-1	P	2006	**558**
Perilla aldehyde	2111-75-3	R	2020	**560**
Peru balsam	8007-00-9	R + P	2020	**564**
Phenylacetaldehyde	122-78-1	R	2020	**575**
Phenyl acetone	103-79-7	P	2008	**568**
Phenyl benzoate	93-99-2	P	2008	**570**
3-Phenylbutanal	16251-77-7	R	2020	**578**
4-Phenyl-3-buten-2-ol	17488-65-2	R	2020	**572**
2-Phenylpropionaldehyde	93-53-8 1340-11-0 34713-70-7	R	2020	**581**
Pinacea derivatives	Not applicable.	S	1994	**584**
Propenylguaethol	94-86-0 63477-41-8	R	2020	**587**
3-Propylidenephthalide	17369-59-4	R	2020	**590**
Pseudoionone	141-10-6	P + S	2006	**596**
Pseudo methylionones	26651-96-7 72968-25-3 1117-41-5	P + S	2009	**593**

Quinoline	91-22-5	P	2010	**599**
Rose ketones	23696-85-7 23726-93-4 59739-63-8 43052-87-5 24720-09-0 23726-94-5 23726-92-3 23726-91-2 35044-68-9 57378-68-4 71048-82-3 35087-49-1 39872-57-6 70266-48-7 33673-71-1 87064-19-5	R	2020	**601**
Rue oil	8014-29-7 84929-47-5	R	2020	**607**
Safrole, Isosafrole and Dihydrosafrole	94-59-7 120-58-1 94-58-6	P + R	1987	**610**
Santolina oil	84961-58-0	P	2008	**614**
Savin oil	8024-00-8 90046-04-1 68916-94-9 90046-03-0	P + S	1982	**616**
Sclareol	515-03-7	S	2006	**619**
Styrax	8046-19-3 8024-01-9 94891-27-7 94891-28-8 101227-15-0	P + R + S	2020	**622**
Tagetes oil and absolute	90131-43-4 8016-84-0 91722-29-1 8016-84-0 91770-75-1	P + R + S	2020	**626**
Tea leaf absolute	84650-60-2	R	2020	**631**
1,2,3,4-Tetrahydro-4-methylquinoline	19343-78-3	S	2009	**634**
α,2,2,3-Tetramethylcyclopent-3-ene-1- butyraldehyde	65114-03-6	R	2020	**637**
Thujone	546-80-5 471-15-8 76231-76-0 1125-12-8	R	2020	**640**
o,m,p-Tolualdehydes and their mixtures	529-20-4 620-23-5 104-87-0 1334-78-7	R	2020	**646**
Toluene	108-88-3	P + S	2004	**650**
p-Tolyl alcohol	589-18-4	R	2020	**653**
Treemoss extracts	90028-67-4 68648-41-9 68917-40-8	R + S	2020	**656**
2,6,6-Trimethylcyclohex-1,3-dienyl methanal	116-26-7	R	2020	**663**
5-(2,2,3-Trimethyl-3-cyclopentenyl)-3- methylpentan-2-ol	65113-99-7	R	2020	**660**
2,6,10-Trimethylundeca-5,9-dien-1-ol	24048-14-4 185019-19-6 58001-88-0 58001-87-9 1373932-23-0	R	2020	**666**

	1018832-07-9			
Verbena oil and absolute (Lippia citriodora Kunth.)	8024-12-2 85116-63-8	R + P	2020	**670**
Ylang ylang extracts	8006-81-3 68606-83-7 83863-30-3	R	2020	**674**

Acetic acid, anhydride, reaction products with 1,5,10-Trimethyl-1,5,9-cyclododecatriene

CAS-No.:	144020-22-4 28371-99-5 This substance was previously erroneously identified as CAS 28371-99-5, however this CAS number is still used on certain commercial qualities today and as such this Standard is also applicable to that CAS number, which is an isomer of CAS 144020-22-4. The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{17}H_{26}O$
		Structure:	
Synonyms:	Methyl trimethylcyclododecatrienyl ketone (mixture of isomers) Trimofix O (commercial name) Fixamber (commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2015

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.00016 %	Category 7A	0.87 %

Acetic acid, anhydride, reaction products with 1,5,10-Trimethyl-1,5,9-cyclododecatriene

Category 2	0.13 %	Category 7B	0.87 %
Category 3	0.40 %	Category 8	0.17 %
Category 4	2.4 %	Category 9	2.2 %
Category 5A	0.60 %	Category 10A	2.2 %
Category 5B	0.52 %	Category 10B	4.4 %
Category 5C	0.60 %	Category 11A	0.17 %
Category 5D	0.17 %	Category 11B	0.17 %
Category 6	0.00016 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Acetic acid, anhydride, reaction products with 1,5,10-Trimethyl-1,5,9-cyclododecatriene

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Acetic acid, anhydride, reaction products with 1,5,10-Trimethyl-1,5,9-cyclododecatriene, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Acetic acid, anhydride, reaction products with 1,5,10-Trimethyl-1,5,9-cyclododecatriene and recommends the limits for the 12 different product categories, which are the acceptable use levels of Acetic acid, anhydride, reaction products with 1,5,10-Trimethyl-1,5,9-cyclododecatriene in the various product categories.

REFERENCES:

The IFRA Standard on Acetic acid, anhydride, reaction products with 1,5,10-Trimethyl-1,5,9-cyclododecatriene is based on at least one of the following publications:

• The RIFM Safety Assessment on Acetic acid, anhydride, reaction products with 1,5,10-Trimethyl-1,5,9-cyclododecatriene if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

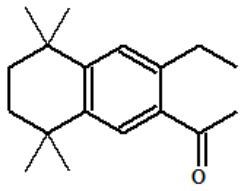
• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Acetic acid, anhydride, reaction products with 1,5,10-Trimethyl-1,5,9-cyclododecatriene

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Acetyl ethyl tetramethyl tetralin (AETT)

CAS-No.:	88-29-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{18}H_{26}O$
		Structure:	
Synonyms:	7-Acetyl-6-ethyl-1,1,4,4-tetramethyl-1,2,3,4-tetrahydronaphthalene Ethanone, 1-(3-ethyl-5,6,7,8-tetrahydro-5,5,8,8-tetramethyl-2-naphthalenyl)- Versalide (commercial name)		

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1977 1980 2002

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Acetyl ethyl tetramethyl tetralin (AETT) should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Acetyl ethyl tetramethyl tetralin (AETT)

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	NEUROTOXICITY

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Acetyl ethyl tetramethyl tetralin (AETT) and recommends not to use Acetyl ethyl tetramethyl tetralin (AETT) as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Acetyl ethyl tetramethyl tetralin (AETT) is based on at least one of the following publications:

• The RIFM Safety Assessment on Acetyl ethyl tetramethyl tetralin (AETT) is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

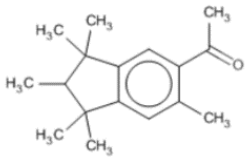
• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Opdyke, D.L.J. (1979), Food and Cosmetics Toxicology 17, 357-360.

• Spencer, P.S., Sterman, A.B et al. (1979), Neurotoxicology 1(1).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Acetyl hexamethyl indan (AHMI)

CAS-No.:	15323-35-0 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{17}H_{24}O$
		Structure:	
Synonyms:	5-Acetyl-1,1,2,3,3,6-hexamethyl indan 6-Acetyl-1,1,2,3,3,5-hexamethylindane 1-(2,3-Dihydro-1,1,2,3,3,6-hexamethyl-1h-inden-5-yl)ethanone Ethanone, 1-(2,3-dihydro-1,1,2,3,3,6-hexamethyl-1H-inden-5-yl)- 1,1,2,3,3,6-Hexamethylindan-5-yl methylketone Phantolid (commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1978 1987 2001 2015

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	2.0 %	Category 7A	No Restriction
Category 2	2.0 %	Category 7B	2.0 %
Category 3	2.0 %	Category 8	2.0 %
Category 4	2.0 %	Category 9	No Restriction
Category 5A	2.0 %	Category 10A	No Restriction

Acetyl hexamethyl indan (AHMI)

Category 5B	2.0 %	Category 10B	2.0 %
Category 5C	2.0 %	Category 11A	No Restriction
Category 5D	2.0 %	Category 11B	2.0 %
Category 6	2.0 %	Category 12	No Restriction

Fragrance ingredient restriction - Note box

The Standard is set due to the phototoxic effects of Acetyl hexamethyl indan (AHMI). For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the Guidance for the use of IFRA Standards.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**PHOTOTOXICITY**

RIFM SUMMARIES:

Human studies – phototoxicity

The IFRA Standard is based upon two photoirritation studies in humans. In the first study, 10 volunteers were treated with 10% solution of Acetyl hexamethyl indan (AHMI) in 75% ethanol plus 25% diethyl phthalate on each forearm. Twenty-four hours later, one arm was irradiated

Acetyl hexamethyl indan (AHMI)

(UVA) and the other served as a control. Observations immediately after radiation, at 24 hrs, and at 48 hours showed no phototoxic effects (RIFM, 1986). In the second study, 10 volunteers were treated with a 10% solution in 75% ethanol plus 25% diethyl phthalate on the back. After 30 minutes, the site was irradiated (UVA and UVB). Observations at 5 minutes after irradiation, and at 3, 24, 48, and 72 hours showed no phototoxic effects (RIFM, 1987).

Animal studies – phototoxicity
• 5, 20, 50 % in guinea pigs, photoirritation observed 20 and 50% (RIFM, 1978a).
• 5, 20% in rabbits, photoirritation observed at 5 and 20% (RIFM, 1978a).
• 1, 5, 10, 20% in guinea pigs and rabbits, photoirritation observed in guinea pigs and rabbits at 5, 10, and 20% (Ogoshi et al., 1980; Ohkoshi et al., 1981).
• 10% in guinea pigs, no photoirritation observed (Guillot et al., 1985).
• 1% in rabbits, photoirritation observed (RIFM, 1978).
• 1, 2, 4 % in rabbits, photoirritation observed (RIFM, 1985a; 1985b).
• 0.01, 1, 10, 25, 50% in hairless mice, photoirritation observed at 10, 25, 50% (RIFM, 1978c).

Animal studies – photoallergy
2% in guinea pigs, no photoallergy observed, 1/10 showed sensitization (RIFM, 1985c).

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Acetyl hexamethyl indan (AHMI) and recommends the limits for the 12 different product categories, which are the acceptable use levels of Acetyl hexamethyl indan (AHMI) in the various product categories.

REFERENCES:

The IFRA Standard on Acetyl hexamethyl indan (AHMI) is based on at least one of the following publications:

• The RIFM Safety Assessment on Acetyl hexamethyl indan (AHMI) is available at the RIFM Safety Assessment Sheet Database:
http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014).
(http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials

Acetyl hexamethyl indan (AHMI)

for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Guillot, J.P., Gonnet, J.F., Loquerie, J.F., Martini, M.C., Convert, P., and Cotte, J. (1985). A new method for the assessment of phototoxic and photoallergic potentials by topical applications in the albino guinea pig. J. Toxicol.-Cut. Ocu. Toxicol., 4(2), 117-133.

• Ogoshi, K., Tanaka, N., and Sekine, A. (1980). A study on the phototoxicity of musk type fragrances. Unpublished. Presented at Society of Cosmetic Chemists, Japan. Report number 7465, 17 November.

• Ohkoshi, K., Watanabe, A., and Tanaka, N. (1981). Phototoxicity of musks in perfumery. J. Society Cosmetic Chemists, Japan, 15(3), 207-213.

• Research Institute for Fragrance Materials, Inc. (1978a). Phototoxicity of synthetic musks. Unpublished report from Shiseido laboratories. Report number 4415, 26 August.

• Research Institute for Fragrance Materials, Inc. (1978b). Phototoxicity tests with 5-acetyl-1,1,2,3,3,6-hexamethylindan in albino rabbits. Unpublished report from Quest International. Report number 8055, 1 January.

• Research Institute for Fragrance Materials, Inc. (1978c). Phototoxicity studies. RIFM report number 2042, 12 May.

• Research Institute for Fragrance Materials, Inc. (1985a). Photosensitization test with 2% and 4% 5-acetyl-1,1,2,3,3,6-hexamethylindan in albino rabbits. Unpublished report from PFW Aroma Chemicals. Report number 29705, 1 November.

• Research Institute for Fragrance Materials, Inc. (1985b). Photosensitization test with 1% 5-acetyl-1,1,2,3,3,6-hexamethylindan in albino rabbits. Unpublished report from PFW Aroma Chemicals. Report number 29706, 1 November.

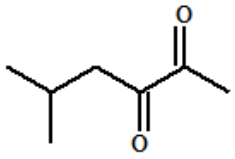
• Research Institute for Fragrance Materials, Inc. (1985c). Photosensitization test with 5-acetyl-1,1,2,3,3,6-hexamethylindan (17179) in guinea pigs. Unpublished report from PFW Aroma Chemicals. Report number 29704, 1 November.

• Research Institute for Fragrance Materials, Inc. (1986). Phototoxicity testing in human subjects. RIFM report number 5748, 19 December.

• Research Institute for Fragrance Materials, Inc. (1987). Phototoxicity testing in human subjects. RIFM report number 5743, 23 January.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Acetyl isovaleryl

CAS-No.:	13706-86-0 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_7H_{12}O_2$
		Structure:	
Synonyms:	5-Methyl-2,3-hexanedione 2,3-Hexanedione, 5-methyl- Acetyl isopentanoyl		

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1980 1983 2002

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Acetyl isovaleryl should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Acetyl isovaleryl

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Acetyl isovaleryl and recommends not to use Acetyl isovaleryl as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Acetyl isovaleryl is based on at least one of the following publications:

• The RIFM Safety Assessment on Acetyl isovaleryl is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Opdyke, D.L.J., Letizia, C. (1982), Food and Chemical Toxicology 20, 637.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Acetylated Vetiver oil

CAS-No.:	84082-84-8 68917-34-0 73246-97-6 62563-80-8 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	Not applicable.
Synonyms:	Vetiveria zizanioides, extract, acetylated Oils, vetiver, acetylated Acetic acid, esters with vetiver oil alcohols Vetiverol, acetate Vetivert acetate (commercial name) Vetivert acetate (Haiti) (commercial name) Vetyveryl acetate (commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2009 2015

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.050 %	Category 7A	0.10 %
Category 2	0.050 %	Category 7B	0.10 %
Category 3	0.050 %	Category 8	0.033 %

Acetylated Vetiver oil

Category 4	0.90 %	Category 9	0.20 %
Category 5A	0.10 %	Category 10A	0.20 %
Category 5B	0.10 %	Category 10B	3.8 %
Category 5C	0.10 %	Category 11A	0.033 %
Category 5D	0.033 %	Category 11B	0.033 %
Category 6	0.098 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is

Acetylated Vetiver oil

derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Acetylated Vetiver oil, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Acetylated Vetiver oil and recommends the limits for the 12 different product categories, which are the acceptable use levels of Acetylated Vetiver oil in the various product categories.

REFERENCES:

The IFRA Standard on Acetylated Vetiver oil is based on at least one of the following publications:

• The RIFM Safety Assessment on Acetylated Vetiver oil if available at the RIFM Safety Assessment Sheet Database:
http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014).
(http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308.
(https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Scientific Committee on Consumer Safety (SCCS) Final Opinion on fragrance ingredient Acetylated Vetiver Oil - AVO (Vetiveria zizanioides root extract acetylated) Adopted on February 26, 2019 - Submission III (SCCS/1599/18).
(https://ec.europa.eu/health/sites/health/files/scientific_committees/consumer_safety/docs/sccs_o_221.pdf).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available in www.ifraorg.org.

Alantroot oil

CAS-No.:	84012-20-4 97676-35-2 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	Not applicable.
Synonyms:	Alantroot oil (Inula helenium) Elecampane oil Inula helenium oil		

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1975 2002

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Alantroot oil should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Alantroot oil

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Alantroot oil and recommends not to use Alantroot oil as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Alantroot oil is based on at least one of the following publications:

• The RIFM Safety Assessment on Alantroot oil is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Opdyke, D.L.J. (1976), Food and Chemical Toxicology 14, 307.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Allyl esters

CAS-No.:	Not applicable. The scope of this Standard includes any CAS number(s) used to identify these fragrance ingredients.	**Molecular formula:**	Not applicable.
Synonyms:	Not applicable.		

History:	Publication date:	2009 (Amendment 44)	Previous Publications:	1977

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**SPECIFICATION**

FRAGRANCE INGREDIENT SPECIFICATION:	Allyl esters should only be used when the level of free Allylalcohol in the ester is less than 0.1%. This recommendation is based on the delayed irritant potential of Allylalcohol.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

Allyl esters

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**IRRITATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Allyl esters. Based on their expert judgement, they recommend to use the fragrance ingredient according to its specification mentioned above.

REFERENCES:

The IFRA Standard on Allyl esters is based on at least one of the following publications:

• The RIFM Safety Assessment on Allyl esters is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

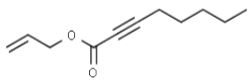
• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Fd. Cosmet, Toxicol, 15,611-21 (1977).

Allyl esters

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Allyl heptine carbonate

CAS-No.:	73157-43-4 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{11}H_{16}O_2$
		Structure:	
Synonyms:	Allyl 2-octynoate 2-Octynoic acid 2-Propenyl ester		

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	1989 1999 2005 2007

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Allyl heptine carbonate should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Allyl heptine carbonate

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Allyl heptine carbonate and recommends not to use Allyl heptine carbonate as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Allyl heptine carbonate is based on at least one of the following publications:

• The RIFM Safety Assessment on Allyl heptine carbonate if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

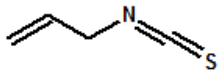
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Allyl isothiocyanate

CAS-No.:	57-06-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_4H_5N_5$
		Structure:	
Synonyms:	Allyl isosulfocyanate Allyl thiocarbonimide 1-Propenal, 3-isothiocyanato- 2-Propenyl isothiocyanate AITC		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2008

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Allyl isothiocyanate as such should not be used as a fragrance ingredient. The natural extracts containing Allyl isothiocyanate should not be used as substitutes for this substance.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX I**

Allyl isothiocyanate

ANNEX I Natural Complex Substances (NCS) containing Allyl isothiocyanate					
Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
61.5	57-06-7	Mustard oil	Brassica spp.	8007-40-7	H2.12
45	57-06-7	Horseradish oil	Amoracia rusticana G. Gaertn. et al.	84775-62-2	A2.12

Allyl isothiocyanate can be found at relatively high levels in Mustard oil and Horseradish oil. The natural extracts containing Allyl isothiocyanate should not be used as substitutes for this substance. This means that the use of Mustard oil and Horseradish oil cannot be considered safe and therefore both extracts should not be used in fragrance mixtures until additional data is available and considered sufficient to support the safe use of these ingredients.

This is a non-exhaustive indicative list of typical natural presence for Allyl isothiocyanate and is intended to be used in the absence of own analytical data. If analysis has shown that the level of the restricted ingredient in a natural complex substance is different from what is provided in this Annex I, then the analytically determined level should be used in place of the indicative level.

It should further be noted that natural complex substances themselves can be restricted by an IFRA Standard.

For a detailed list of natural contributions, please refer to the Annex I of IFRA Standards, publicly available on the IFRA website (www.ifrafragrance.org).

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**INSUFFICIENT DATA**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Allyl isothiocyanate and recommends not to use Allyl isothiocyanate as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:

The IFRA Standard on Allyl isothiocyanate is based on at least one of the following publications:

• The RIFM Safety Assessment on Allyl isothiocyanate if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2:

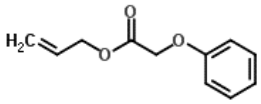
Allyl isothiocyanate

Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Allyl phenoxyacetate

CAS-No.:	7493-74-5 863306-60-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{11}H_{12}O_3$
		Structure:	
Synonyms:	Acetic acid, phenoxy-, 2-propenyl ester 2-Propenyl phenoxyacetate Prop-2-enyl 2-phenoxyacetate Acetate PA		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2009

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION / SPECIFICATION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.054 %	Category 7A	0.41 %
Category 2	0.016 %	Category 7B	0.41 %
Category 3	0.21 %	Category 8	0.025 %
Category 4	0.30 %	Category 9	0.59 %
Category 5A	0.076 %	Category 10A	0.59 %

Allyl phenoxyacetate

Category 5B	0.076 %	Category 10B	1.7 %
Category 5C	0.076 %	Category 11A	0.025 %
Category 5D	0.025 %	Category 11B	0.025 %
Category 6	0.18 %	Category 12	52 %

FRAGRANCE INGREDIENT SPECIFICATION:	According to the IFRA Specification Standard of Allyl esters, Allyl esters should only be used when the level of free Allylalcohol in the ester is less than 0.1%. This recommendation is based on the delayed irritant potential of Allylalcohol. Please also refer to the IFRA Specification Standard Allyl esters.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Allyl phenoxyacetate

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Allyl phenoxyacetate, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Allyl phenoxyacetate and recommends the limits for the 12 different product categories, which are the acceptable use levels of Allyl phenoxyacetate in the various product categories.
In addition, they recommend to use Allyl phenoxyacetate according to the specification above mentioned.

REFERENCES:

The IFRA Standard on Allyl phenoxyacetate is based on at least one of the following publications:

• The RIFM Safety Assessment on Allyl phenoxyacetate if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

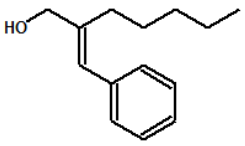
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

α-Amyl cinnamic alcohol

CAS-No.:	101-85-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{14}H_{20}O$
		Structure:	
Synonyms:	Amylcinnamyl alcohol α-Amylcinnamyl alcohol 2-Amyl-3-phenyl-2-propen-1-ol 2-Benzylideneheptanol 1-Heptanol, 2-(phenylmethylene)- α-Pentylcinnamyl alcohol		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2007

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.27 %	Category 7A	0.64 %
Category 2	0.080 %	Category 7B	0.64 %
Category 3	0.64 %	Category 8	0.11 %
Category 4	1.5 %	Category 9	1.6 %
Category 5A	0.38 %	Category 10A	1.6 %

α-Amyl cinnamic alcohol

Category 5B	0.32 %	Category 10B	3.5 %
Category 5C	0.38 %	Category 11A	0.11 %
Category 5D	0.11 %	Category 11B	0.11 %
Category 6	0.32 %	Category 12	79 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

α-Amyl cinnamic alcohol

Additional information is available in the RIFM safety assessment for α-Amyl cinnamic alcohol, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for α-Amyl cinnamic alcohol and recommends the limits for the 12 different product categories, which are the acceptable use levels of α-Amyl cinnamic alcohol in the various product categories.

REFERENCES:

The IFRA Standard on α-Amyl cinnamic alcohol is based on at least one of the following publications:

• The RIFM Safety Assessment on α-Amyl cinnamic alcohol if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

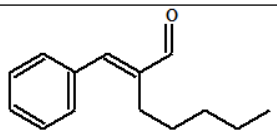
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

α-Amyl cinnamic aldehyde

CAS-No.:	122-40-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{14}H_{18}O$
		Structure:	
Synonyms:	Amyl cinnamal Amyl cinnamic aldehyde α-Amylcinnamaldehyde α-Amyl ß-phenylacrolein Heptanal, 2-(phenylmethylene) α-Pentylcinnamaldehyde α-Pentyl-ß-phenylacrolein 2-(Phenylmethylene)heptanal Flomine (commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2009 2013

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.58 %	Category 7A	0.26 %
Category 2	0.53 %	Category 7B	0.26 %
Category 3	0.26 %	Category 8	0.11 %
Category 4	7.0 %	Category 9	1.5 %

α-Amyl cinnamic aldehyde

Category 5A	2.5 %	Category 10A	1.5 %
Category 5B	0.32 %	Category 10B	3.5 %
Category 5C	0.45 %	Category 11A	0.11 %
Category 5D	0.11 %	Category 11B	0.11 %
Category 6	0.064 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX II**

ANNEX II

α-Amyl cinnamic aldehyde	CAS number (Aldehyde)	Schiff base	CAS number (Schiff base)	Level of restricted aldehyde in the Schiff base (%)
α-Amylcinnamaldehyde	122-40-7	α-Amylcinnamaldehyde-methyl anthranilate (or Jasmea, Seringone)	68527-78-6	60.3

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

α-Amyl cinnamic aldehyde

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for α-Amyl cinnamic aldehyde, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for α-Amyl cinnamic aldehyde and recommends the limits for the 12 different product categories, which are the acceptable use levels of α-Amyl cinnamic aldehyde in the various product categories.

REFERENCES:

The IFRA Standard on α-Amyl cinnamic aldehyde is based on at least one of the following publications:

• The RIFM Safety Assessment on α-Amyl cinnamic aldehyde if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

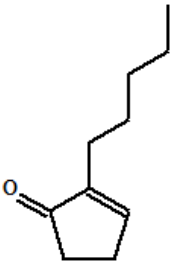
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Amylcyclopentenone

CAS-No.:	25564-22-1 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{10}H_{16}O$
		Structure:	
Synonyms:	2-Cyclopenten-1-one, 2-pentyl- 2-Pentyl-2-cyclopentenone 2-Pentylcyclopent-2-en-1-one		

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	1987 1994 2007

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Amylcyclopentenone should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Amylcyclopentenone

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Amylcyclopentenone and recommends not to use Amylcyclopentenone as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Amylcyclopentenone is based on at least one of the following publications:

• The RIFM Safety Assessment on Amylcyclopentenone if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Angelica root oil

CAS-No.:	8015-64-3 84775-41-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	Not applicable.
Synonyms:	Angelica archangelica oil Angelica archangelica root oil Angelica root oil (Angelica archangelica L.)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1975 1978 2001 2015

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.80 %	Category 7A	No Restriction
Category 2	0.80 %	Category 7B	0.80 %
Category 3	0.80 %	Category 8	0.80 %
Category 4	0.80 %	Category 9	No Restriction
Category 5A	0.80 %	Category 10A	No Restriction
Category 5B	0.80 %	Category 10B	0.80 %

Angelica root oil

Category 5C	0.80 %	Category 11A	No Restriction
Category 5D	0.80 %	Category 11B	0.80 %
Category 6	0.80 %	Category 12	No Restriction

Fragrance ingredient restriction - Note box

The Standard is set due to the phototoxic effects of Angelica root oil. For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the Guidance for the use of IFRA Standards.

If the level of furocoumarins is unknown, the restriction level specified in this IFRA Standard applies.

Combination effects of phototoxic ingredients are only taken into consideration for the furocoumarin-containing fragrance ingredients (extracts) listed in the IFRA Standard of Citrus oils and other furocoumarins containing essential oils.

If combinations of furocoumarin-containing phototoxic fragrance ingredients (extracts) are used, the use levels must be reduced accordingly. The sum of the concentrations of all furocoumarin-containing phototoxic fragrance ingredients (extracts), expressed in % of their recommended upper concentration level in the consumer product shall not exceed 100.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Angelica root oil

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	PHOTOTOXICITY

RIFM SUMMARIES:

Two human phototoxicity studies were conducted.
In one study, the test material at concentrations of 1% and 5% was applied to the backs of 30 male volunteers for 48 hours, under occlusion. 23 hours after patch removal the sites were irradiated. Observations were made at 72 and 96 hours after application. No phototoxic reactions were observed in any subjects with either 1 or 5% concentrations of the test material (RIFM, 1975a).
In a second study, the test material was applied neat to 13 male and female volunteers. Six hours later, the test sites were exposed to UVA radiation. Positive reactions were observed in 5/13 subjects (Kaidbey and Kligman, 1978, 1980).

Additional studies are:
• 4% on guinea pigs, UVA, photoirritation observed in all animals, 20/20 (Guillot, et al, 1985).
• 100% on hairless mice, UV, photoirritation observed (RIFM, 1974. Forbes, et al, 1977). 0.78, 1.56, 3.125, 6.25, 12.5, 25, 50% on hairless mice. UV. Photoirritation observed at concentrations of 1.56% and higher (RIFM, 1975b).
• 0.375, 0.75, and 1.5% on hairless mice. Photoirritation observed at all concentrations (RIFM, 1987).

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Angelica root oil and recommends the limits for the 12 different product categories, which are the acceptable use levels of Angelica root oil in the various product categories.

REFERENCES:

The IFRA Standard on Angelica root oil is based on at least one of the following publications:

• Forbes P.D., Urbach F., and Davies R.E. (1977). Phototoxicity testing of fragrance raw materials. Food and Cosmetics Toxicology, 15, 55-60.

• Guillot, J.P., Gonnet, J.F., Loquerie, J.F., Martini, M.C., Convert, P., and Cotte, J. (1985). A new method for the assessment of phototoxic and photoallergic potentials by topical applications in the albino guinea pig. Journal of Toxicology: Cutaneous and Ocular Toxicology, 4(2), 117-133.

• Kaidbey, K.H. and Kligman, A.M. (1978). Identification of topical photosensitizing agents in humans. JID 70(3), 149-151.

• Kaidbey, K.H. and Kligman, A.M. (1980). Identification of contact photosensitizers by human assay. Current Concepts in Cutaneous Toxicity, 55-68. Academic Press, NY.

• Research Institute for Fragrance Materials, Inc. (1974). Phototoxicity and irritation test of

Angelica root oil

fragrance materials in the mouse and miniature swine. RIFM report number 2037, 17 July.

• Research Institute for Fragrance Materials, Inc. (1975a). Phototoxicity and irritation test of fragrance materials in the mouse and miniature swine. RIFM report number 2038, 4 February.

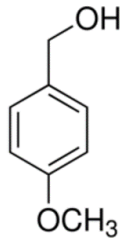
• Research Institute for Fragrance materials, Inc. (1975b). Primary skin irritation and phototoxicity evaluation in human subjects with fragrance materials. RIFM report number 15092, December.

• Research Institute for Fragrance Materials, Inc. (1987). Phototoxicity dilution assay of angelica root oil in hairless mice. RIFM report number 5147, 26 May.

• IFRA Standard on Citrus oils and other furocoumarins containing essential oils.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Anisyl alcohol

CAS-No.:	105-13-5 1331-81-3 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_8H_{10}O_2$
		Structure:	
Synonyms:	Anisalcohol Anise alcohol Anisic alcohol Benzyl alcohol, p-methoxy p-Methoxybenzyl alcohol		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2007 2015

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.0028 %	Category 7A	0.033 %
Category 2	0.039 %	Category 7B	0.033 %
Category 3	0.025 %	Category 8	0.0020 %
Category 4	0.21 %	Category 9	0.099 %
Category 5A	0.041 %	Category 10A	0.099 %

Anisyl alcohol

Category 5B	0.0055 %	Category 10B	0.17 %
Category 5C	0.033 %	Category 11A	0.0020 %
Category 5D	0.0020 %	Category 11B	0.0020 %
Category 6	0.091 %	Category 12	14 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX I**

ANNEX I

Natural Complex Substances (NCS) containing Anisyl alcohol

Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
0.8	105-13-5	Cassie absolute	Vachellia farnesiana (L.) Willd.	8023-82-3	F2.1
0.2	105-13-5	Cassie extract	Vachellia farnesiana (L.) Willd.	8023-82-3	F2.13
6.6	105-13-5	Vanilla absolute	Vanilla spp.	8024-06-4	G2.1
1	105-13-5	Vanilla oleoresin	Vanilla spp.	8024-06-4	G2.21
1	105-13-5	Vanilla tahitensis extract	Vanilla tahitensis J.W. Moore	953789-39-4	G2.13
0.1	105-13-5	Vanilla tincture	Vanilla planifolia Jacks. ex Andrews (Orchidaceae)	8047-24-3	G2.31

This is a non-exhaustive indicative list of typical natural presence for Anisyl alcohol and is intended to be used in the absence of own analytical data. If analysis has shown that the level of the restricted ingredient in a natural complex substance is different from what is provided in this Annex I, then the analytically determined level should be used in place of the indicative level.

Anisyl alcohol

It should further be noted that natural complex substances themselves can be restricted by an IFRA Standard.
For a detailed list of natural contributions, please refer to the Annex I of IFRA Standards, publicly available on the IFRA website (www.ifrafragrance.org).

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Anisyl alcohol, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Anisyl alcohol and recommends the limits for the 12 different product categories, which are the acceptable use levels of Anisyl alcohol in the various product categories.

REFERENCES:

The IFRA Standard on Anisyl alcohol is based on at least one of the following publications:

• The RIFM Safety Assessment on Anisyl alcohol if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

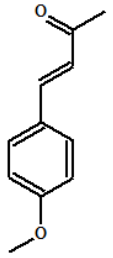
• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

Anisyl alcohol

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Anisylidene acetone

CAS-No.:	943-88-4 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{11}H_{12}O_2$
		Structure:	
Synonyms:	3-Butene-2-one, 4-(4-methoxyphenyl) ester 4-(p-methoxyphenyl)-3-butene-2-one Methyl p-methoxycinnamyl ketone		

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1974 2002

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Anisylidene acetone should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Anisylidene acetone

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Anisylidene acetone and recommends not to use Anisylidene acetone as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Anisylidene acetone is based on at least one of the following publications:

• The RIFM Safety Assessment on Anisylidene acetone is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

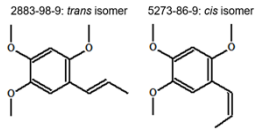
• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Opdyke, D.L.J. (1975), Food and Chemical Toxicology 13, 456.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

cis-and trans-Asarone

CAS-No.:	494-40-6 2883-98-9 5273-86-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.	**Molecular formula:**	$C_{12}H_{16}O_3$
		Structure:	
Synonyms:	494-40-6: Benzene, 1,2,4-trimethoxy-5-(1-propen-1-yl)- (unspecified isomer) (E)-and (Z)-2,4,5-Trimethoxypropen-1-yl benzene 2883-98-9: α-Asarone trans-Asarone Benzene, 1,2,4-trimethoxy-5-(1-propenyl)-, (E)- trans-Isoasarone 5273-86-9: ß-Asarone cis-ß-Asarone Benzene, 1,2,4-trimethoxy-5-(1-propenyl)-, (Z)- cis-Isoasarone		

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1991

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	December 1991
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION / RESTRICTION**

FRAGRANCE INGREDIENT PROHIBITION:	cis- and trans-Asarone as such should not be used as fragrance ingredients.

cis-and trans-Asarone

	The natural extracts containing cis- and trans-Asarone should not be used as substitutes for this substance.

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	See notebox	Category 7A	See notebox
Category 2	See notebox	Category 7B	See notebox
Category 3	See notebox	Category 8	See notebox
Category 4	See notebox	Category 9	See notebox
Category 5A	See notebox	Category 10A	See notebox
Category 5B	See notebox	Category 10B	See notebox
Category 5C	See notebox	Category 11A	See notebox
Category 5D	See notebox	Category 11B	See notebox
Category 6	See notebox	Category 12	See notebox

Fragrance ingredient restriction - Note box

On the basis of established maximum concentration levels of this substance in commercially available natural sources (like essential oils, extracts and absolutes), exposure to this substance from the use of these oils and extracts (e.g. Calamus oils) is regarded acceptable as long as the level of cis- and trans-Asarone in the finished consumer product does not exceed 100ppm (0.01 %).

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX I**

cis-and trans-Asarone

ANNEX I Natural Complex Substances (NCS) containing cis-and trans-Asarone					
Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
0.7	2883-98-9	Calamus oil	Acorus calamus L.	8015-79-0	A2.12
70	5273-86-9	Calamus oil	Acorus calamus L.	8015-79-0	A2.12
3.7	2883-98-9	Cubeb oil	Piper cubeba L. f.	8007-87-2	G2.12
0.1	2883-98-9	Verbena absolute	Lippia citriodora (L.) Kunth	8024-12-2	E2.1
0.01	5273-86-9	Verbena absolute	Lippia citriodora (L.) Kunth	8024-12-2	E2.1
70.7	494-40-6	Calamus oil	Acorus calamus L.	8015-79-0	A2.12

The natural contribution of cis-and trans-Asarone is determined by the sum of the natural contributions of each of its isomers.

This is a non-exhaustive indicative list of typical natural presence for cis-and trans-Asarone and is intended to be used in the absence of own analytical data. If analysis has shown that the level of the restricted ingredient in a natural complex substance is different from what is provided in this Annex I, then the analytically determined level should be used in place of the indicative level.

It should further be noted that natural complex substances themselves can be restricted by an IFRA Standard.

For a detailed list of natural contributions, please refer to the Annex I of IFRA Standards, publicly available on the IFRA website (www.ifrafragrance.org).

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	CARCINOGENICITY

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for cis-and trans-Asarone and recommends not to use cis-and trans-Asarone as or in fragrance ingredients in any finished product application.

However, the presence of cis-and trans-Asarone in natural extracts used as ingredients in finished consumer products is tolerated only according to the upper concentration level mentioned in the Notebox if the natural extracts are not being used to provide an alternative, indirect source of the banned substance.

REFERENCES:

The IFRA Standard on cis-and trans-Asarone is based on at least one of the following publications:

• The RIFM Safety Assessment on cis-and trans-Asarone is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D.,

cis-and trans-Asarone

Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014) (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

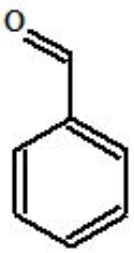
• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• R.W. Wiseman, E.C. Miller et al. (1987), Cancer Res. 47,2275-2283.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Benzaldehyde

CAS-No.:	100-52-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	C_7H_6O
		Structure:	
Synonyms:	Benzenecarbonal Benzene carboxaldehyde Benzenecarboxaldehyde Benzenemethylal Benzoic aldehyde Bitter almond oil, synthetic Phenylformaldehyde Phenylmethanol aldehyde		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2009 2013

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.045 %	Category 7A	0.52 %
Category 2	0.014 %	Category 7B	0.52 %
Category 3	0.27 %	Category 8	0.021 %
Category 4	0.25 %	Category 9	0.49 %

Benzaldehyde

Category 5A	0.064 %	Category 10A	0.49 %
Category 5B	0.064 %	Category 10B	1.8 %
Category 5C	0.064 %	Category 11A	0.021 %
Category 5D	0.021 %	Category 11B	0.021 %
Category 6	0.15 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX I AND ANNEX II**

ANNEX I

Natural Complex Substances (NCS) containing Benzaldehyde

Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
99	100-52-7	Almond oil, bitter	Prunus amygdalus amara (Bitter Almond) kernel oil	8013-76-1	H2.12
0.03	100-52-7	Balsam oil, Peru	Myroxylon balsamum (L.) Harms var. pereirae (Royle) Harms	8007-00-9	K2.9
0.1	100-52-7	Cajuput oil	Melaleuca leucadendron L.	8008-98-8	E2.12
1	100-52-7	Cassia bark extract	Cinnamomum cassia Blume	8007-80-5	C2.13
1	100-52-7	Cassia oil	Cinnamomum aromaticum Nees	8007-80-5	E2.12
0.3	100-52-7	Cassie absolute	Vachellia farnesiana (L.) Willd.	8023-82-3	F2.1
0.3	100-52-7	Cassie extract	Vachellia farnesiana (L.)	8023-82-3	F2.13

Benzaldehyde

			Willd.		
99	100-52-7	Cherry Bark, wild, extract	Prunus serotina Ehrh.	84604-07-9	C2.13
0.1	100-52-7	Cinnamon bark extract	Cinnamomum zeylanicum Blume	8015-91-6	C2.13
0.2	100-52-7	Cinnamon bark oil	Cinnamomum zeylanicum Blume	8015-91-6	C2.12
0.5	100-52-7	Cinnamon bark oil, Laos	Cinnamomum loureiroi Nees	97659-68-2	C2.12
0.16	100-52-7	Cinnamon leaf oil	Cinnamomum zeylanicum Blume	8015-91-6	E2.12
0.6	100-52-7	Cistus absolute	Cistus ladaniferus L.	8016-26-0	E2.1
0.4	100-52-7	Cistus concrete	Cistus ladaniferus L.	8016-26-0	E2.7
0.9	100-52-7	Cistus oil	Cistus ladaniferus L.	8016-26-0	E2.12
0.2	100-52-7	Davana oil	Artemisia pallens Wall.	8016-03-3	E2.12
0.1	100-52-7	Hyacinth absolute	Hyacinthus orientalis L.	8023-94-7	F2.1
0.6	100-52-7	Labdanum absolute	Cistus ladaniferus L.	8016-26-0	E2.1
0.4	100-52-7	Labdanum concrete	Cistus ladaniferus L.	8016-26-0	E2.7
0.8	100-52-7	Labdanum extract ambreine	Cistus ladaniferus L.	68917-77-1	E2.1.1
0.2	100-52-7	Labdanum gum	Cistus ladaniferus L.	8016-26-0	E2.16
0.9	100-52-7	Labdanum oil	Cistus ladaniferus L.	8016-26-0	E2.12
0.2	100-52-7	Labdanum oleoresin	Cistus ladaniferus L.	8016-26-0	E2.21
0.2	100-52-7	Niaouli oil	Melaleuca viridiflora Sol. ex Gaertn.	8014-68-4	E2.12
1	100-52-7	Rose absolute	Rosa x damascena Mill.	90106-38-0	F2.1
0.5	100-52-7	Rose concrete	Rosa x damascena Mill.	90106-38-0	F2.7
0.05	100-52-7	Styrax extract	Liquidambar styraciflua L.	8046-19-3	K2.13
0.1	100-52-7	Styrax oil, Honduras	Liquidambar styraciflua L.	8046-19-3	K2.9
0.05	100-52-7	Tolu, balsam, extract	Myroxylon balsamum (L.) Harms.	8024-03-1	K2.13
0.01	100-52-7	Tolu, balsam, gum	Myroxylon balsamum (L.) Harms.	8024-03-1	K2.16

This is a non-exhaustive indicative list of typical natural presence for Benzaldehyde and is intended to be used in the absence of own analytical data. If analysis has shown that the level of the restricted ingredient in a natural complex substance is different from what is provided in this Annex I, then the analytically determined level should be used in place of the indicative level.

Benzaldehyde

It should further be noted that natural complex substances themselves can be restricted by an IFRA Standard.
For a detailed list of natural contributions, please refer to the Annex I of IFRA Standards, publicly available on the IFRA website (www.ifrafragrance.org).

ANNEX II				
Benzaldehyde	**CAS number (Aldehyde)**	**Schiff base**	**CAS number (Schiff base)**	**Level of restricted aldehyde in the Schiff base (%)**
Benzaldehyde	100-52-7	Benzaldehyde methyl anthranilate (or Amandolene)	39129-16-3	44.4

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Benzaldehyde, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Benzaldehyde and recommends the limits for the 12 different product categories, which are the acceptable use levels of Benzaldehyde in the various product categories.

REFERENCES:

The IFRA Standard on Benzaldehyde is based on at least one of the following publications:

• The RIFM Safety Assessment on Benzaldehyde if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y.,

Benzaldehyde

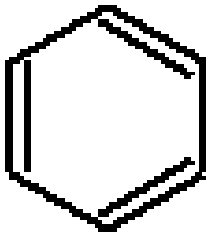
Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Benzene

CAS-No.:	71-43-2 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	C_6H_6
		Structure:	
Synonyms:	Benzol		

History:	Publication date:	2004 (Amendment 38)	Previous Publications:	1988

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION / SPECIFICATION**

FRAGRANCE INGREDIENT PROHIBITION:	Benzene should not be used as a fragrance ingredient.

FRAGRANCE INGREDIENT SPECIFICATION:	The level of Benzene has to be kept as low as practicable and should never exceed 1 ppm in the fragrance compound/mixture or fragrance oil. Since the introduction of the original Restriction on the use of Benzene by IFRA in 1988, there have been significant changes in

Benzene

	manufacturing practices that permit the reduction of the maximum permitted level of this substance. These include use of technological improvements allowing replacement of this solvent for the extraction of fragrance materials and in eliminating its presence as an impurity in alternative extraction solvents.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**CARCINOGENICITY**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Benzene and recommends not to use Benzene as or in fragrance ingredients in any finished product application other than described in the above fragrance ingredient specification.

REFERENCES:

The IFRA Standard on Benzene is based on at least one of the following publications:

• The RIFM Safety Assessment on Benzene is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2:

Benzene

Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

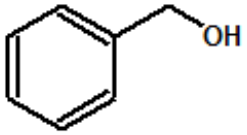
• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• IARC (International Agency for Research on Cancer) Monographs Vol 7, p. 203 (1974); Vol 29, p. 93 and 391 (1982); Suppl. 7, p. 120 (1987).

• CSTEE (Scientific Committee on Toxicity, Ecotoxicity and the Environment), Opinion on the results of the Risk Assessment of Benzene carried out in the framework of Council Regulation (EEC) 793/93 as adopted on Feb., 6, 2003.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Benzyl alcohol

CAS-No.:	100-51-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	C_7H_8O
		Structure:	
Synonyms:	Benzenemethanol Benzylic alcohol α-Hydroxytoluene Phenylcarbinol Phenyl carbinol Phenylmethanol Phenylmethyl alcohol α-Toluenol		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2007

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.45 %	Category 7A	0.68 %
Category 2	0.14 %	Category 7B	0.68 %
Category 3	0.34 %	Category 8	0.057 %
Category 4	2.5 %	Category 9	2.2 %

Benzyl alcohol

Category 5A	0.64 %	Category 10A	2.2 %
Category 5B	0.17 %	Category 10B	8.5 %
Category 5C	0.34 %	Category 11A	0.057 %
Category 5D	0.057 %	Category 11B	0.057 %
Category 6	1.5 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX I**

ANNEX I

Natural Complex Substances (NCS) containing Benzyl alcohol

Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
0.9	100-51-6	Balsam oil, Peru	Myroxylon balsamum (L.) Harms var. pereirae (Royle) Harms	8007-00-9	K2.9
0.2	100-51-6	Carnation absolute	Dianthus caryophyllus L.	8021-43-0	F2.1
2.7	100-51-6	Cassie absolute	Vachellia farnesiana (L.) Willd.	8023-82-3	F2.1
1	100-51-6	Cassie extract	Vachellia farnesiana (L.) Willd.	8023-82-3	F2.13
0.1	100-51-6	Cinnamon leaf oil	Cinnamomum zeylanicum Blume	8015-91-6	E2.12
2.1	100-51-6	Flouve oil	Anthoxanthum odorantum L.	68916-09-6	E2.12
0.1	100-51-6	Gardenia tahitensis oil	Gardenia tahitensis DC.	683748-01-8	F2.13
40	100-51-6	Hyacinth	Hyacinthus	8023-94-7	F2.1

Benzyl alcohol

		absolute	orientalis L.		
0.1	100-51-6	Jasmine concrete	Jasminum grandiflorum L.	8022-96-6	F2.7
3	100-51-6	Jasmine officinale absolute	Jasminum officinale L.	8024-43-9	F2.1
8	100-51-6	Jasmine sambac absolute	Jasminum sambac (L.) Aiton	103798-23-6	F2.24
0.05	100-51-6	Mimosa absolute	Acacia decurrens (Wendl.f.) Willd.	8031-03-6	F2.1
2.8	100-51-6	Narcissus poeticus absolute	Narcissus poeticus L.	68917-12-4	F2.1
0.1	100-51-6	Rose absolute	Rosa x damascena Mill.	90106-38-0	F2.1
0.02	100-51-6	Rose oil	Rosa x damascena Mill.	8007-01-0	F2.12
1	100-51-6	Styrax absolute	Liquidambar styraciflua L.	8046-19-3	K2.1
0.2	100-51-6	Tolu, balsam, extract	Myroxylon balsamum (L.) Harms.	8024-03-1	K2.13
0.04	100-51-6	Tolu, balsam, gum	Myroxylon balsamum (L.) Harms.	8024-03-1	K2.16
0.5	100-51-6	Tuberose absolute	Poliantes tuberosa L.	8024-05-3	F2.1
0.5	100-51-6	Tuberose concrete	Poliantes tuberosa L.	8024-05-3	F2.7
0.1	100-51-6	Violet leaf absolute	Viola odorata L.	8024-08-6	E2.1
0.1	100-51-6	Ylang ylang oil I	Cananga odorata (Lam.) Hook. f. &Thomson oil (forma genuine Steenis)	8006-81-3	F2.12.1
0.2	100-51-6	Ylang ylang oil II	Cananga odorata (Lam.) Hook. f. &Thomson oil (forma genuine Steenis)	8006-81-3	F2.12.2
0.05	100-51-6	Ylang ylang oil III	Cananga odorata (Lam.) Hook. f. &Thomson oil (forma genuine Steenis)	8006-81-3	F2.12.3
0.5	100-51-6	Ylang, Ylang oil extra	Cananga odorata (Lam.) Hook. f. &Thomson oil (forma genuine Steenis)	8006-81-3	F2.12 X
0.5	100-51-6	Ylang, Ylang oil, terpene-free	Cananga odorata (Lam.) Hook. f. &Thomson oil (forma genuine Steenis)	68952-44-3	F2.29

Benzyl alcohol

This is a non-exhaustive indicative list of typical natural presence for Benzyl alcohol and is intended to be used in the absence of own analytical data. If analysis has shown that the level of the restricted ingredient in a natural complex substance is different from what is provided in this Annex I, then the analytically determined level should be used in place of the indicative level.
It should further be noted that natural complex substances themselves can be restricted by an IFRA Standard.
For a detailed list of natural contributions, please refer to the Annex I of IFRA Standards, publicly available on the IFRA website (www.ifrafragrance.org).

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Benzyl alcohol, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Benzyl alcohol and recommends the limits for the 12 different product categories, which are the acceptable use levels of Benzyl alcohol in the various product categories.

REFERENCES:

The IFRA Standard on Benzyl alcohol is based on at least one of the following publications:

• The RIFM Safety Assessment on Benzyl alcohol if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

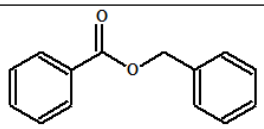
Benzyl alcohol

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Benzyl benzoate

CAS-No.:	120-51-4 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{14}H_{12}O_2$
		Structure:	
Synonyms:	Benylate Benzoic acid, benzyl ester Benzoic acid, phenylmethyl ester Benzyl phenylformate Phenylmethyl benzoate		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2007

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	1.7 %	Category 7A	0.41 %
Category 2	1.4 %	Category 7B	0.41 %
Category 3	0.41 %	Category 8	0.070 %
Category 4	4.8 %	Category 9	1.9 %
Category 5A	4.3 %	Category 10A	1.9 %

Benzyl benzoate

Category 5B	0.21 %	Category 10B	12 %
Category 5C	0.83 %	Category 11A	0.070 %
Category 5D	0.070 %	Category 11B	0.070 %
Category 6	0.41 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX I**

ANNEX I

Natural Complex Substances (NCS) containing Benzyl benzoate

Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
54	120-51-4	Balsam oil, Peru	Myroxylon balsamum (L.) Harms var. pereirae (Royle) Harms	8007-00-9	K2.9
0.5	120-51-4	Benzoin extract, Siam	Styrax tonkinensis Craib	9000-72-0	K2.13
0.6	120-51-4	Benzoin extract, Sumatra	Styrax benzoin Dryand.	9000-05-9	K2.13
4.2	120-51-4	Cananga oil	Cananga odorata (Lam.) Hook. f. & Thomson (forma macrophylla Steenis)	68606-83-7	F2.12
13	120-51-4	Carnation absolute	Dianthus caryophyllus L.	8021-43-0	F2.1
0.07	120-51-4	Cassia bark extract	Cinnamomum cassia Blume	8007-80-5	C2.13
0.1	120-51-4	Cassia oil	Cinnamomum aromaticum Nees	8007-80-5	E2.12
0.05	120-51-4	Cassie absolute	Vachellia farnesiana (L.)	8023-82-3	F2.1

Benzyl benzoate

			Willd.		
0.3	120-51-4	Cinnamon bark extract	Cinnamomum zeylanicum Blume	8015-91-6	C2.13
0.6	120-51-4	Cinnamon bark oil	Cinnamomum zeylanicum Blume	8015-91-6	C2.12
0.01	120-51-4	Cinnamon bark oil, Laos	Cinnamomum loureiroi Nees	97659-68-2	C2.12
3.5	120-51-4	Cinnamon leaf oil	Cinnamomum zeylanicum Blume	8015-91-6	E2.12
65	120-51-4	Flouve oil	Anthoxanthum odorantum L.	68916-09-6	E2.12
65	120-51-4	Flouve oil without coumarin	Anthoxanthum odorantum L.	68916-09-6	E2.33
6	120-51-4	Hyacinth absolute	Hyacinthus orientalis L.	8023-94-7	F2.1
5	120-51-4	Jasmine concrete	Jasminum grandiflorum L.	8022-96-6	F2.7
10	120-51-4	Jasmine officinale absolute	Jasminum officinale L.	8024-43-9	F2.1
0.75	120-51-4	Jasmine sambac absolute	Jasminum sambac (L.) Aiton	103798-23-6	F2.24
8.9	120-51-4	Narcissus poeticus absolute	Narcissus poeticus L.	68917-12-4	F2.1
1.2	120-51-4	Rosewood oil	Aniba rosaeodora (Ducke) var amazonica	8015-77-8	D2.12
10.4	120-51-4	Tolu, balsam, extract	Myroxylon balsamum (L.) Harms.	8024-03-1	K2.13
2.1	120-51-4	Tolu, balsam, gum	Myroxylon balsamum (L.) Harms.	8024-03-1	K2.16
5.5	120-51-4	Tuberose absolute	Poliantes tuberosa L.	8024-05-3	F2.1
0.72	120-51-4	Tuberose concrete	Poliantes tuberosa L.	8024-05-3	F2.7
4.5	120-51-4	Ylang ylang oil I	Cananga odorata (Lam.) Hook. f. &Thomson oil (forma genuine Steenis)	8006-81-3	F2.12.1
7	120-51-4	Ylang ylang oil II	Cananga odorata (Lam.) Hook. f. &Thomson oil (forma genuine Steenis)	8006-81-3	F2.12.2
7	120-51-4	Ylang ylang oil III	Cananga odorata (Lam.) Hook. f. &Thomson oil (forma genuine Steenis)	8006-81-3	F2.12.3
6	120-51-4	Ylang, Ylang oil extra	Cananga odorata (Lam.) Hook. f. &Thomson oil	8006-81-3	F2.12 X

Benzyl benzoate

			(forma genuine Steenis)		
3.3	120-51-4	Ylang, Ylang oil, terpene-free	Cananga odorata (Lam.) Hook. f. &Thomson oil (forma genuine Steenis)	68952-44-3	F2.29

This is a non-exhaustive indicative list of typical natural presence for Benzyl benzoate and is intended to be used in the absence of own analytical data. If analysis has shown that the level of the restricted ingredient in a natural complex substance is different from what is provided in this Annex I, then the analytically determined level should be used in place of the indicative level.
It should further be noted that natural complex substances themselves can be restricted by an IFRA Standard.
For a detailed list of natural contributions, please refer to the Annex I of IFRA Standards, publicly available on the IFRA website (www.ifrafragrance.org).

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Benzyl benzoate, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Benzyl benzoate and recommends the limits for the 12 different product categories, which are the acceptable use levels of Benzyl benzoate in the various product categories.

REFERENCES:

The IFRA Standard on Benzyl benzoate is based on at least one of the following publications:

• The RIFM Safety Assessment on Benzyl benzoate if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G.,

Benzyl benzoate

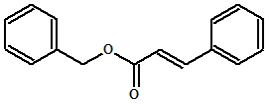
Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Benzyl cinnamate

CAS-No.:	103-41-3 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{16}H_{14}O_2$
		Structure:	
Synonyms:	Benzyl γ-phenylacrylate Benzyl 3-phenylpropenoate Cinnamein Cinnamic acid, benzyl ester Phenylmethyl 3-phenyl-2-propenoate 2-Propenoic acid, 3-phenyl-phenylmethyl ester		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2007

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.36 %	Category 7A	2.4 %
Category 2	0.11 %	Category 7B	2.4 %
Category 3	1.2 %	Category 8	0.17 %
Category 4	2.0 %	Category 9	3.9 %
Category 5A	0.51 %	Category 10A	3.9 %

Benzyl cinnamate

Category 5B	0.51 %	Category 10B	14 %
Category 5C	0.51 %	Category 11A	0.17 %
Category 5D	0.17 %	Category 11B	0.17 %
Category 6	1.2 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX I**

ANNEX I

Natural Complex Substances (NCS) containing Benzyl cinnamate

Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
15.2	103-41-3	Balsam oil, Peru	Myroxylon balsamum (L.) Harms var. pereirae (Royle) Harms	8007-00-9	K2.9
0.8	103-41-3	Benzoin extract, Siam	Styrax tonkinensis Craib	9000-72-0	K2.13
0.8	103-41-3	Benzoin extract, Sumatra	Styrax benzoin Dryand.	9000-05-9	K2.13
1	103-41-3	Styrax extract	Liquidambar styraciflua L.	8046-19-3	K2.13
2.1	103-41-3	Styrax oil, Honduras	Liquidambar styraciflua L.	8046-19-3	K2.9
2.6	103-41-3	Tolu, balsam, extract	Myroxylon balsamum (L.) Harms.	8024-03-1	K2.13
0.6	103-41-3	Tolu, balsam, gum	Myroxylon balsamum (L.) Harms.	8024-03-1	K2.16

Benzyl cinnamate

This is a non-exhaustive indicative list of typical natural presence for Benzyl cinnamate and is intended to be used in the absence of own analytical data. If analysis has shown that the level of the restricted ingredient in a natural complex substance is different from what is provided in this Annex I, then the analytically determined level should be used in place of the indicative level.
It should further be noted that natural complex substances themselves can be restricted by an IFRA Standard.
For a detailed list of natural contributions, please refer to the Annex I of IFRA Standards, publicly available on the IFRA website (www.ifrafragrance.org).

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Benzyl cinnamate, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Benzyl cinnamate and recommends the limits for the 12 different product categories, which are the acceptable use levels of Benzyl cinnamate in the various product categories.

REFERENCES:

The IFRA Standard on Benzyl cinnamate is based on at least one of the following publications:

• The RIFM Safety Assessment on Benzyl cinnamate if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2:

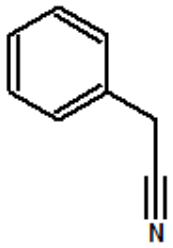
Benzyl cinnamate

Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Benzyl cyanide

CAS-No.:	140-29-4 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	C_8H_7N
		Structure:	
Synonyms:	Benzeneacetonitrile Benzylnitrile Phenylacetonitrile Phenyl acetyl nitrile		

History:	Publication date:	2004 (Amendment 38)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION / RESTRICTION**

FRAGRANCE INGREDIENT PROHIBITION:	Benzyl cyanide as such should not be used as fragrance ingredient. The natural extracts containing Benzyl cyanide should not be used as substitutes for this substance.

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	See notebox	Category 7A	See notebox

Benzyl cyanide

Category 2	See notebox	Category 7B	See notebox
Category 3	See notebox	Category 8	See notebox
Category 4	See notebox	Category 9	See notebox
Category 5A	See notebox	Category 10A	See notebox
Category 5B	See notebox	Category 10B	See notebox
Category 5C	See notebox	Category 11A	See notebox
Category 5D	See notebox	Category 11B	See notebox
Category 6	See notebox	Category 12	See notebox

Fragrance ingredient restriction - Note box

On the basis of established maximum concentration levels of this substance in commercially available natural sources (like essential oils and extracts), exposure to this substance from the use of these oils and extracts is not significant and the use of these oils is authorized as long as the level of Benzyl cyanide in the finished product does not exceed 0.01% (100 ppm).

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX I**

ANNEX I

Natural Complex Substances (NCS) containing Benzyl cyanide

Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
0.1	140-29-4	Gardenia tahitensis oil	Gardenia tahitensis DC.	683748-01-8	F2.13
0.1	140-29-4	Genet absolute	Spartium junceum L.	90131-21-8	E2.1
0.07	140-29-4	Jasmine grandiflorum absolute	Jasminum grandiflorum L.	8022-96-6	F2.1

Benzyl cyanide

1.2	140-29-4	Jasmine sambac absolute	Jasminum sambac (L.) Aiton	103798-23-6	F2.1
5	140-29-4	Karo karunde absolute	Leptactina senegambica Hook f.	94334-14-2	F2.1
0.09	140-29-4	Magnolia flower oil	Magnolia grandiflora L.	68917-19-1	F2.12
0.2	140-29-4	Orange flower oil, bitter (neroli and neroli bigarade)	Citrus aurantium L. spp. Amara Link	8016-38-4	F2.12
0.5	140-29-4	Orange flower water absolute	Citrus aurantium L. spp. Amara Link	8030-28-2	F2.54
0.8	140-29-4	Tuberose absolute	Poliantes tuberosa L.	8024-05-3	F2.1
0.17	140-29-4	Tuberose oil	Poliantes tuberosa L.	8024-05-3	F2.12
0.05	140-29-4	Ylang ylang oil I	Cananga odorata (Lam.) Hook. f. &Thomson oil (forma genuine Steenis)	8006-81-3	F2.12.1
0.02	140-29-4	Ylang ylang oil II	Cananga odorata (Lam.) Hook. f. &Thomson oil (forma genuine Steenis)	8006-81-3	F2.12.2
0.02	140-29-4	Ylang ylang oil III	Cananga odorata (Lam.) Hook. f. &Thomson oil (forma genuine Steenis)	8006-81-3	F2.12.3
0.03	140-29-4	Ylang, Ylang oil extra	Cananga odorata (Lam.) Hook. f. &Thomson oil (forma genuine Steenis)	8006-81-3	F2.12 X
0.03	140-29-4	Ylang, Ylang oil, terpene-free	Cananga odorata (Lam.) Hook. f. &Thomson oil (forma genuine Steenis)	68952-44-3	F2.29

This is a non-exhaustive indicative list of typical natural presence for Benzyl cyanide and is intended to be used in the absence of own analytical data. If analysis has shown that the level of the restricted ingredient in a natural complex substance is different from what is provided in this Annex I, then the analytically determined level should be used in place of the indicative level.
It should further be noted that natural complex substances themselves can be restricted by an IFRA Standard.
For a detailed list of natural contributions, please refer to the Annex I of IFRA Standards, publicly available on the IFRA website (www.ifrafragrance.org).

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	RELEASE OF CYANIDE

Benzyl cyanide

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Benzyl cyanide and recommends not to use Benzyl cyanide as or in fragrance ingredients in any finished product application.
However, the presence of Benzyl cyanide in natural extracts used as ingredients in finished consumer products is tolerated only according to the upper concentration level mentioned in the Notebox if the natural extracts are not being used to provide an alternative, indirect source of the banned substance.

REFERENCES:

The IFRA Standard on Benzyl cyanide is based on at least one of the following publications:

• The RIFM Safety Assessment on Benzyl cyanide is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014) (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

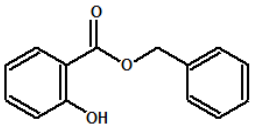
• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Potter et al., 2001, Food and Chemical Toxicology 39 (2), page 141-146.

• Potter et al., 2001, Food and Chemical Toxicology 39 (2), page 147-151.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Benzyl salicylate

CAS-No.:	118-58-1 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{14}H_{12}O_3$
		Structure:	
Synonyms:	Benzoic acid, 2-hydroxy-, phenylmethyl ester Benzyl 2-hydroxybenzoate Benzyl o-hydroxybenzoate 2-Hydroxybenzoic acid, benzyl ester Phenylmethyl 2-hydroxybenzoate Salicylic acid, benzyl ester		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2007

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	1.3 %	Category 7A	15 %
Category 2	0.39 %	Category 7B	15 %
Category 3	7.8 %	Category 8	0.77 %
Category 4	7.3 %	Category 9	14 %
Category 5A	1.9 %	Category 10A	51 %

Benzyl salicylate

Category 5B	1.9 %	Category 10B	51 %
Category 5C	1.9 %	Category 11A	28 %
Category 5D	1.9 %	Category 11B	28 %
Category 6	4.3 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX I**

ANNEX I

Natural Complex Substances (NCS) containing Benzyl salicylate

Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
0.4	118-58-1	Cananga oil	Cananga odorata (Lam.) Hook. f. & Thomson (forma macrophylla Steenis)	68606-83-7	F2.12
7	118-58-1	Carnation absolute	Dianthus caryophyllus L.	8021-43-0	F2.1
0.03	118-58-1	Cassie absolute	Vachellia farnesiana (L.) Willd.	8023-82-3	F2.1
0.2	118-58-1	Hyacinth absolute	Hyacinthus orientalis L.	8023-94-7	F2.1
0.1	118-58-1	Jasmine concrete	Jasminum grandiflorum L.	8022-96-6	F2.7
0.2	118-58-1	Jasmine officinale absolute	Jasminum officinale L.	8024-43-9	F2.1
0.2	118-58-1	Jasmine sambac absolute	Jasminum sambac (L.) Aiton	103798-23-6	F2.1
3.6	118-58-1	Tuberose absolute	Poliantes tuberosa L.	8024-05-3	F2.1
2.1	118-58-1	Tuberose	Poliantes	8024-05-3	F2.7

Benzyl salicylate

		concrete	tuberosa L.		
3	118-58-1	Ylang ylang oil I	Cananga odorata (Lam.) Hook. f. &Thomson oil (forma genuine Steenis)	8006-81-3	F2.12.1
3	118-58-1	Ylang ylang oil II	Cananga odorata (Lam.) Hook. f. &Thomson oil (forma genuine Steenis)	8006-81-3	F2.12.2
4	118-58-1	Ylang ylang oil III	Cananga odorata (Lam.) Hook. f. &Thomson oil (forma genuine Steenis)	8006-81-3	F2.12.3
3	118-58-1	Ylang, Ylang oil extra	Cananga odorata (Lam.) Hook. f. &Thomson oil (forma genuine Steenis)	8006-81-3	F2.12 X
2	118-58-1	Ylang, Ylang oil, terpene-free	Cananga odorata (Lam.) Hook. f. &Thomson oil (forma genuine Steenis)	68952-44-3	F2.29

This is a non-exhaustive indicative list of typical natural presence for Benzyl salicylate and is intended to be used in the absence of own analytical data. If analysis has shown that the level of the restricted ingredient in a natural complex substance is different from what is provided in this Annex I, then the analytically determined level should be used in place of the indicative level.
It should further be noted that natural complex substances themselves can be restricted by an IFRA Standard.
For a detailed list of natural contributions, please refer to the Annex I of IFRA Standards, publicly available on the IFRA website (www.ifrafragrance.org).

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Benzyl salicylate, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

Benzyl salicylate

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Benzyl salicylate and recommends the limits for the 12 different product categories, which are the acceptable use levels of Benzyl salicylate in the various product categories.

REFERENCES:

The IFRA Standard on Benzyl salicylate is based on at least one of the following publications:

• The RIFM Safety Assessment on Benzyl salicylate if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

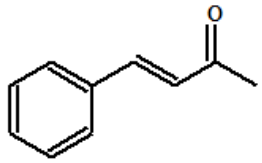
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Benzylidene acetone

CAS-No.:	122-57-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{10}H_{10}O$
		Structure:	
Synonyms:	4-Phenyl-3-buten-2-one 3-Buten-2-one, 4-phenyl- Benzilideneacetone Methyl styryl ketone		

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1974 2002

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Benzylidene acetone should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Benzylidene acetone

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Benzylidene acetone and recommends not to use Benzylidene acetone as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Benzylidene acetone is based on at least one of the following publications:

• The RIFM Safety Assessment on Benzylidene acetone is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Opdyke, D.L.J. (1973), Food and Chemical Toxicology 11, 1021.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Bergamot oil expressed

CAS-No.:	8007-75-8 89957-91-5 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	Not applicable.
Synonyms:	Not applicable.		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1974 1992 2015

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.40 %	Category 7A	No Restriction
Category 2	0.40 %	Category 7B	0.40 %
Category 3	0.40 %	Category 8	0.40 %
Category 4	0.40 %	Category 9	No Restriction
Category 5A	0.40 %	Category 10A	No Restriction
Category 5B	0.40 %	Category 10B	0.40 %

Bergamot oil expressed

Category 5C	0.40 %	Category 11A	No Restriction
Category 5D	0.40 %	Category 11B	0.40 %
Category 6	0.40 %	Category 12	No Restriction

Fragrance ingredient restriction - Note box

The Standard is set due to the phototoxic effects of Bergamot oil expressed. For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the Guidance for the use of IFRA Standards.

If the level of furocoumarins is unknown, the restriction level specified in this IFRA Standard applies.

Combination effects of phototoxic ingredients are only taken into consideration for the furocoumarin-containing fragrance ingredients (extracts) listed in the IFRA Standard of Citrus oils and other furocoumarins containing essential oils.

If combinations of furocoumarin-containing phototoxic fragrance ingredients (extracts) are used, the use levels must be reduced accordingly. The sum of the concentrations of all furocoumarin-containing phototoxic fragrance ingredients (extracts), expressed in % of their recommended upper concentration level in the consumer product shall not exceed 100.

For qualities of the expressed oil in which the less volatile components have been concentrated by partial or total removal of the terpene fraction, this limit should be reduced in proportion to the degree of concentration.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Bergamot oil expressed

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	PHOTOTOXICITY

RIFM SUMMARIES:

These recommendations are based on the published literature on the phototoxicity of this material, summarized by D.L. Opdyke, Fd. Cosm. Toxicol. 11,1031 (1973) and other investigations published in Contact Dermatitis 3,225 (1977).

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Bergamot oil expressed and recommends the limits for the 12 different product categories, which are the acceptable use levels of Bergamot oil expressed in the various product categories.

REFERENCES:

The IFRA Standard on Bergamot oil expressed is based on at least one of the following publications:

• D.L. Opdyke, Fd. Cosm. Toxicol. 11,1031 (1973) and other investigations published in Contact Dermatitis 3,225 (1977).

• IFRA Standard on Citrus oils and other furocoumarins containing essential oils.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Birch wood pyrolysate

CAS-No.:	8001-88-5 68917-50-0 84012-15-7 85251-66-7 85940-29-0 91745-85-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	Not applicable.
Synonyms:	Prohibition of the crude material: Birch tar oil, crude Specification for the distillates: Birch tar oil dephenolated Birch tar oil rectified Essence bouleau dephenolisée Essence bouleau (Goudron) rect.		

History:	Publication date:	2013 (Amendment 47)	Previous Publications:	1996 2003

Implementation dates:	For new submissions*:	August 10, 2013
	For existing fragrance compounds*:	August 10, 2014
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION / SPECIFICATION**

FRAGRANCE INGREDIENT PROHIBITION:	Crude birch wood (bark) pyrolysates (oils) derived by pyrolysis (destructive distillation) of the wood or bark of Betula pubescens, Betula pendula, Betula lenta or Betula alba should not be used as a fragrance ingredient for any

Birch wood pyrolysate

	finished product application. Only rectified (purified) Birch tar oils being in compliance with the limitations for polynuclear aromatic hydrocarbons (PAH) established by this IFRA Standard should be used.

FRAGRANCE INGREDIENT SPECIFICATION:	Limit content of polynuclear aromatic hydrocarbons (PAH) resulting from the use of rectified oils according to Good Manufacturing Practice. Benzopyrene and 1,2-Benzanthracene are to be used as markers for PAH. If used alone or in combination with rectified Cade oil, rectified Styrax oil or rectified Opoponax oil, the total concentration of both of the markers should not exceed 1 ppb in the final product.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**CARCINOGENICITY, GENOTOXICITY BY RELEASE OF POLYNUCLEAR HYDROCARBONS (PAH).**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Birch wood pyrolysate and recommends not to use Birch wood pyrolysate (crude) as or in fragrance ingredients in any finished product application.
In addition, they recommend to use Birch wood pyrolysate (distillates) according to the specification mentioned above.

REFERENCES:

Birch wood pyrolysate

The IFRA Standard on Birch wood pyrolysate is based on at least one of the following publications:

• The RIFM Safety Assessment on Birch wood pyrolysate if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

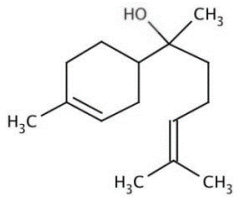
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

α-Bisabolol

CAS-No.:	515-69-5 23089-26-1 23178-88-3 78148-59-1 76738-75-5 72691-24-8 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{15}H_{26}O$
		Structure:	
Synonyms:	(R*,R*)-.α.,4-Dimethyl-.α.-(4-methyl-3-pentenyl)cyclohex-3-ene-1-methanol 3-Cyclohexene-1-methanol, .α.,4-dimethyl-.α.-(4-methyl-3-pentenyl)-, (R*,R*)- 6-Methyl-2-(4-methyl-3-cyclohexen-1-yl)-5-hepten-2-ol 3-Cyclohexene-1-methanol, α,4-dimethyl-α-(4-methyl-3-penten-1- yl)- 3-Cyclohexene-1-methanol, α,4-dimethyl-α-(4-methyl-3-penten-1- yl)-, (αS,1S)- 3-Cyclohexene-1-methanol, α,4-dimethyl-α-(4-methyl-3-penten-1- yl)-, (αR,1R)- 3-Cyclohexene-1-methanol, α,4-dimethyl-α-(4-methyl-3-penten-1- yl)-, (αR,1S)- 3-Cyclohexene-1-methanol, α,4-dimethyl-α-(4-methyl-3-penten-1- yl)-, (αS,1R)- alpha-Bisabolol Bisabolol Bisabolol nat. roh (Candela-Öl) (Commercial name) Dragosantol (Commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):

α-Bisabolol

Category 1	0.42 %	Category 7A	3.0 %
Category 2	0.13 %	Category 7B	3.0 %
Category 3	2.5 %	Category 8	0.20 %
Category 4	2.4 %	Category 9	4.6 %
Category 5A	0.60 %	Category 10A	4.6 %
Category 5B	0.60 %	Category 10B	17 %
Category 5C	0.60 %	Category 11A	0.20 %
Category 5D	0.20 %	Category 11B	0.20 %
Category 6	1.4 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX I**

ANNEX I

Natural Complex Substances (NCS) containing α-Bisabolol

Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
0.2	515-69-5	Angelica seed oil	Angelica archangelica L.	8015-64-3	H2.12
0.15	515-69-5	Arnica absolute	Arnica montana L.	8057-65-6	F2.1
0.6	515-69-5	Arnica oils, montana	Arnica montana L.	8057-65-6	F2.12
1.4	515-69-5	Baccharis dracunculifolia oil	Baccharis dracunculifolia	68991-21-9	E2.12
0.2	515-69-5	Basil oil,	Ocimum basilicum	8015-73-4	E2.12

α-Bisabolol

		chemotype linalool	L.		
2	515-69-5	Cabreuva oil	Myrocarpus frondosus Fr. Allem	68188-03-4	D2.12
0.3	515-69-5	Carrot seed oil	Daucus carota L.	8015-88-1	H2.12
0.6	515-69-5	Cedarwood oil, Chinese	Cupressus funebris Endl.	1159574-01-2	D2.12
0.5	515-69-5	Cedarwood oil, terpeneless	Juniperus mexicana Schiede	68603-22-5	D2.29
0.15	515-69-5	Cedarwood oil, Texas	Juniperus mexicana Schiede	68990-83-0	D2.12
0.6	515-69-5	Cedarwood oil, Virginian	Juniperus virginiana L.	8000-27-9	D2.12
4	515-69-5	Chamomile flower oil, blue	Matricaria chamomilla L.	8002-66-2	F2.12
0.2	515-69-5	Fir needle oil, Siberian	Abies siberica Ledeb (Pinaceae)	8021-29-2	E2.12
0.3	515-69-5	Lavandin absolute	Lavandula officinalis x Lavandula latifolia	8022-15-9	F2.1
0.2	515-69-5	Lavandin concrete	Lavandula officinalis x Lavandula latifolia	8022-15-9	F2.7
0.35	515-69-5	Lavandin grosso oil	Lavandula officinalis x Lavandula latifolia	8022-15-9	F2.12
0.03	515-69-5	Lavandin oil	Lavandula officinalis x Lavandula latifolia	8022-15-9	F2.12
0.3	515-69-5	Lavendin super oil	Lavendula super	93685-88-2	F2.12
0.5	515-69-5	Lemon oil folded (10x)	Citrus limon (L.) Burm. F.	8008-56-8	G2.6
0.3	515-69-5	Lime oil folded	Citrus aurantifolia (Christman) Swingle	8008-26-2	G2.6
0.08	515-69-5	Mastic oil	Pistacia lentiscus L.	68991-39-9	K2.12
0.2	515-69-5	Populus nigra absolute	Populus nigra L.	921202-04-2	F2.1
0.5	515-69-5	Sandalwood oil	Santalum album L.	8006-87-9	D2.12
0.6	515-69-5	Sandalwood oil, New Caledonian	Santalum austrocaledonicum Vieill	91845-48-6	D2.12
0.3	515-69-5	Schinus terebenthifolius CO2 extract	Schinus terebenthifolius Raddi	949495-68-5	G2.27
0.1	515-69-5	Turmeric oil	Curcuma longa L.	8024-37-1	A2.12
0.3	515-69-5	Yarrow oil	Achillea millefolium L.	8022-07-9	E2.12
2	515-69-5	Zdravetz oil	Geranium macrorrhizum L.	68991-32-2	E2.12

α-Bisabolol

This is a non-exhaustive indicative list of typical natural presence for α-Bisabolol and is intended to be used in the absence of own analytical data. If analysis has shown that the level of the restricted ingredient in a natural complex substance is different from what is provided in this Annex I, then the analytically determined level should be used in place of the indicative level.
It should further be noted that natural complex substances themselves can be restricted by an IFRA Standard.
For a detailed list of natural contributions, please refer to the Annex I of IFRA Standards, publicly available on the IFRA website (www.ifrafragrance.org).

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for α-Bisabolol, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for α-Bisabolol and recommends the limits for the 12 different product categories, which are the acceptable use levels of α-Bisabolol in the various product categories.

REFERENCES:

The IFRA Standard on α-Bisabolol is based on at least one of the following publications:

• The RIFM Safety Assessment on α-Bisabolol if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

α-Bisabolol

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Bitter orange peel oil expressed

CAS-No.:	68916-04-1 72968-50-4 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	Not applicable.
Synonyms:	Orange Peel Oil, Bitter (Citrus aurantium L. subsp amara L.) Bitter orange oil (Citrus aurantium L. subsp. amara L.) Citrus aurantium peel oil Curacao peel oil (Citrus aurantium L.) Daidai peel oil (Citrus aurantium L.)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1975 1992 2002 2015

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	1.25 %	Category 7A	No Restriction
Category 2	1.25 %	Category 7B	1.25 %
Category 3	1.25 %	Category 8	1.25 %
Category 4	1.25 %	Category 9	No Restriction
Category 5A	1.25 %	Category 10A	No Restriction

Bitter orange peel oil expressed

Category 5B	1.25 %	Category 10B	1.25 %
Category 5C	1.25 %	Category 11A	No Restriction
Category 5D	1.25 %	Category 11B	1.25 %
Category 6	1.25 %	Category 12	No Restriction

Fragrance ingredient restriction - Note box

The Standard is set due to the phototoxic effects of Bitter orange peel oil expressed. For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the Guidance for the use of IFRA Standards.

If the level of furocoumarins is unknown, the restriction level specified in this IFRA Standard applies.

Combination effects of phototoxic ingredients are only taken into consideration for the furocoumarin-containing fragrance ingredients (extracts) listed in the IFRA Standard of Citrus oils and other furocoumarins containing essential oils.

If combinations of furocoumarin-containing phototoxic fragrance ingredients (extracts) are used, the use levels must be reduced accordingly. The sum of the concentrations of all furocoumarin-containing phototoxic fragrance ingredients (extracts), expressed in % of their recommended upper concentration level in the consumer product shall not exceed 100.

For qualities of the expressed oil in which the less volatile components have been concentrated by partial or total removal of the terpene fraction, this limit should be reduced in proportion to the degree of concentration.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Bitter orange peel oil expressed

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	PHOTOTOXICITY

RIFM SUMMARIES:

Human Studies: The material was tested for phototoxic potential in human volunteers (Kaidbey and Kligman, 1980). Five µL/cm² of 100% bitter orange oil was applied to 2 cm² under occlusive tape. One cm circular sites were exposed to visible light or 20 J/ cm² UVA. Reactions were read at 24 and 48 hours. All 8 subjects reacted.

Animal studies: The NOEL was based on studies conducted with pooled samples of bitter orange oil in one miniature swine and hairless mice, which showed NOEL of 6.25%.

The Expert Panel for Fragrance Safety recommended that the skin contact level should be 1.25%, incorporating a 5 fold uncertainty factor.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Bitter orange peel oil expressed and recommends the limits for the 12 different product categories, which are the acceptable use levels of Bitter orange peel oil expressed in the various product categories.

REFERENCES:

The IFRA Standard on Bitter orange peel oil expressed is based on at least one of the following publications:

• P.D. Forbes, F. Urbach and R.E. Davies (1977). Phototoxicity testing of fragrance raw materials. Food and Cosmetics Toxicology, 15, 55-60. Report number 1422.

• Kaidbey, K.H. and Kligman, A.M. (1980). Identification of contact photosensitizers by human assay. Current Concepts in Cutaneous Toxicity, 55-68. Academic Press, NY. Report number 1995.

• Research Institute for Fragrance Materials, Inc. (1972). Phototoxicity and irritation studies of fragrance materials in hairless mice and miniature swine. RIFM report number 2034, May 26.

• Research Institute for Fragrance Materials, Inc. (1978). Phototoxicity and irritation studies of mice and pigs with fragrance materials. RIFM report number 2042, April 14.

• IFRA Standard on Citrus oils and other furocoumarins containing essential oils.

Bitter orange peel oil expressed

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Boldo oil

CAS-No.:	8022-81-9 84649-96-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	Not applicable.
Synonyms:	Boldo leaf oil (Peumus boldus Mol.) Oil, boldo leaf Peumus boldus oil		

History:	Publication date:	2009 (Amendment 44)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	August 7, 2009
	For existing fragrance compounds*:	August 7, 2010
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Boldo oil should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Boldo oil

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**INSUFFICIENT DATA**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Boldo oil and recommends not to use Boldo oil as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:

The IFRA Standard on Boldo oil is based on at least one of the following publications:

• The RIFM Safety Assessment on Boldo oil if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

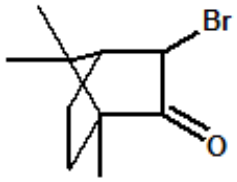
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

3-Bromo-1,7,7-trimethylbicyclo[2.2.1]heptane-2-one

CAS-No.:	76-29-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{10}H_{15}BrO$
		Structure:	
Synonyms:	Bicyclo[2.2.1]heptan-2-one, 3-bromo-1,7,7-trimethyl- 2-Bornanone, 3-bromo- 3-Bromobornan-2-one 3-Bromo-2-bornanone 3-Bromocamphor Camphor bromide Camphor, 3-bromo-		

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	3-Bromo-1,7,7-trimethylbicyclo[2.2.1]heptane-2-one should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE**

3-Bromo-1,7,7-trimethylbicyclo[2.2.1]heptane-2-one

	GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	INSUFFICIENT DATA

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 3-Bromo-1,7,7-trimethylbicyclo[2.2.1]heptane-2-one and recommends not to use 3-Bromo-1,7,7-trimethylbicyclo[2.2.1]heptane-2-one as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:

The IFRA Standard on 3-Bromo-1,7,7-trimethylbicyclo[2.2.1]heptane-2-one is based on at least one of the following publications:

• The RIFM Safety Assessment on 3-Bromo-1,7,7-trimethylbicyclo[2.2.1]heptane-2-one if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

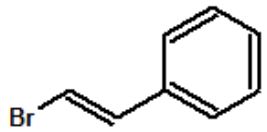
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Bromostyrene

CAS-No.:	103-64-0 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	C_8H_7Br
		Structure:	
Synonyms:	Benzene, (2-bromoethenyl)- α-Bromo-ß-phenylethylene ß-Bromostyrene ß-Bromovinylbenzene ω-Bromstyrene Bromstyrol Bromstyrolene		

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Bromostyrene should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE**

Bromostyrene

	GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	INSUFFICIENT DATA

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Bromostyrene and recommends not to use Bromostyrene as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:

The IFRA Standard on Bromostyrene is based on at least one of the following publications:

• The RIFM Safety Assessment on Bromostyrene if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

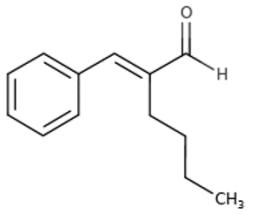
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

α-Butylcinnamaldehyde

CAS-No.:	7492-44-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{13}H_{16}O$
		Structure:	
Synonyms:	2-Benzylidenehexanal Butyl cinnamic aldehyde α-Butyl-β-phenylacrolein Hexanal, 2-(phenylmethylene)-alpha-butylcinnamaldehyde		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2011

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.077 %	Category 7A	0.88 %
Category 2	0.023 %	Category 7B	0.88 %
Category 3	0.46 %	Category 8	0.036 %
Category 4	0.43 %	Category 9	0.84 %
Category 5A	0.11 %	Category 10A	0.84 %

α-Butylcinnamaldehyde

Category 5B	0.11 %	Category 10B	3.0 %
Category 5C	0.11 %	Category 11A	0.036 %
Category 5D	0.036 %	Category 11B	0.036 %
Category 6	0.25 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

α-Butylcinnamaldehyde

Additional information is available in the RIFM safety assessment for α-Butylcinnamaldehyde, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for α-Butylcinnamaldehyde and recommends the limits for the 12 different product categories, which are the acceptable use levels of α-Butylcinnamaldehyde in the various product categories.

REFERENCES:

The IFRA Standard on α-Butylcinnamaldehyde is based on at least one of the following publications:

• The RIFM Safety Assessment on α-Butylcinnamaldehyde if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

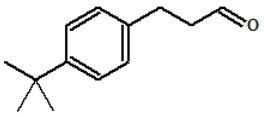
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

p-tert-Butyldihydrocinnamaldehyde

CAS-No.:	18127-01-0 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{13}H_{18}O$
		Structure:	
Synonyms:	Benzenepropanal, 4-(1,1-dimethylethyl)- 3-(4-tert-Butylphenyl)propionaldehyde Bourgeonal (commercial name) Liliphenal (commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1991 1994 2007 2008

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.0041 %	Category 7A	0.029 %
Category 2	0.025 %	Category 7B	0.029 %
Category 3	0.025 %	Category 8	0.0096 %
Category 4	0.47 %	Category 9	0.099 %
Category 5A	0.12 %	Category 10A	0.099 %
Category 5B	0.029 %	Category 10B	0.24 %

p-tert-Butyldihydrocinnamaldehyde

Category 5C	0.037 %	Category 11A	0.0096 %
Category 5D	0.0096 %	Category 11B	0.0096 %
Category 6	0.087 %	Category 12	6.9 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for p-tert-Butyldihydrocinnamaldehyde, which can be downloaded from the RIFM Safety Assessment

p-tert-Butyldihydrocinnamaldehyde

Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for p-tert-Butyldihydrocinnamaldehyde and recommends the limits for the 12 different product categories, which are the acceptable use levels of p-tert-Butyldihydrocinnamaldehyde in the various product categories.

REFERENCES:

The IFRA Standard on p-tert-Butyldihydrocinnamaldehyde is based on at least one of the following publications:

• The RIFM Safety Assessment on p-tert-Butyldihydrocinnamaldehyde if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

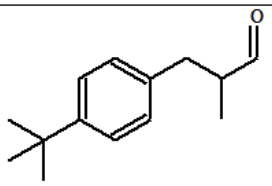
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

p-tert-Butyl-α-methylhydrocinnamic aldehyde (p-BMHCA)

CAS-No.:	80-54-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{14}H_{20}O$
		Structure:	
Synonyms:	Benzenepropanal, 4-(1,1-dimethylethyl)-alpha-methyl- p-t-Bucinal 2-(4-tert-Butylbenzyl)propionaldehyde p-t-Butyl-alpha-methylhydrocinnamaldehyde Butylphenyl methylpropional alpha-Methyl-ß-(p-t-butylphenyl)propionaldehyde Lilestralis (commercial name) Lilial (commercial name) Lysmeral (commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2003 2007 2008 2013 2015

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION / PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	p-tert-Butyl-α-methylhydrocinnamic aldehyde (p-BMHCA) should not be used for any finished product application included under IFRA Categories 1 and 6 (lipsticks and oral care products).

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):

p-tert-Butyl-α-methylhydrocinnamic aldehyde (p-BMHCA)

Category 1	0.0 % (Prohibited)	Category 7A	0.040 %
Category 2	0.090 %	Category 7B	0.040 %
Category 3	0.040 %	Category 8	0.017 %
Category 4	1.4 %	Category 9	0.10 %
Category 5A	0.060 %	Category 10A	0.10 %
Category 5B	0.050 %	Category 10B	0.63 %
Category 5C	0.050 %	Category 11A	0.017 %
Category 5D	0.017 %	Category 11B	0.017 %
Category 6	0.0 % (Prohibited)	Category 12	16 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX II**

ANNEX II

p-tert-Butyl-α-methylhydrocinnamic aldehyde (p-BMHCA)	CAS number (Aldehyde)	Schiff base	CAS number (Schiff base)	Level of restricted aldehyde in the Schiff base (%)
p-t-Butyl-α-	80-54-6	Lysmeral-methyl anthranilate	91-51-0	60.6

p-tert-Butyl-α-methylhydrocinnamic aldehyde (p-BMHCA)

methylhydrocinnamic aldehyde (Lysmeral)		(or Verdantiol)		

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.
Additional information is available in the RIFM safety assessment for p-tert-Butyl-α-methylhydrocinnamic aldehyde (p-BMHCA), which can be downloaded from the RIFM Safety Assessment Sheet Database:
http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for p-tert-Butyl-α-methylhydrocinnamic aldehyde (p-BMHCA) and recommends the limits for the 12 different product categories, which provide the acceptable use levels of p-tert-Butyl-α-methylhydrocinnamic aldehyde (p-BMHCA) in the various product categories.
In addition, they recommend not to use p-tert-Butyl-α-methylhydrocinnamic aldehyde (p-BMHCA) in any finished product application included in Categories 1 and 6.

REFERENCES:

The IFRA Standard p-tert-Butyl-α-methylhydrocinnamic aldehyde (p-BMHCA) is based in at least one of the following publications:

• The RIFM Safety Assessment on p-tert-Butyl-α-methylhydrocinnamic aldehyde (p-BMHCA) is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014).
(http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

p-tert-Butyl-α-methylhydrocinnamic aldehyde (p-BMHCA)

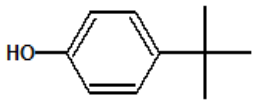
• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• SCCS (Scientific Committee on Consumer Safety), Opinion on the safety of Butylphenyl methylpropional (p-BMHCA) in cosmetic products - Submission II, preliminary version of 14 December 2017, final version of 10 May 2019, SCCS/1591/2017 (https://ec.europa.eu/health/sites/health/files/scientific_committees/consumer_safety/docs/sccs_o_213.pdf).

Additional information on the application of IFRA Standards is available in the Guidance to IFRA Standards, publicly available in www.ifraorg.org.

p-tert-Butylphenol

CAS-No.:	98-54-4 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{10}H_{14}O$
		Structure:	
Synonyms:	4-tert-Butylphenol 4-(1,1-Dimethylethyl) phenol 1-Hydroxy-4-tert-butylbenzene Phenol, 4-(1,1-dimethylethyl)- Phenol, p-tert-butyl		

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1975 2002

Implementation dates:	For new submissions*:	Not applicable
	For existing fragrance compounds*:	Not applicable
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	p-tert-Butylphenol should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

p-tert-Butylphenol

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION, DERMAL DEPIGMENTATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for p-tert-Butylphenol and recommends not to use p-tert-Butylphenol as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on p-tert-Butylphenol is based on at least one of the following publications:

• The RIFM Safety Assessment on p-tert-Butylphenol is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

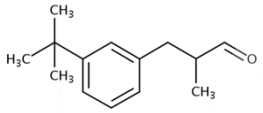
• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Opdyke, D.L.J. (1975), Food and Chemical Toxicology 12, 835.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

3-(m-tert-Butylphenyl)-2-methylpropionaldehyde (m-BMHCA)

CAS-No.:	62518-65-4 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{14}H_{20}O$
		Structure:	
Synonyms:	Benzenepropanal, 3-(1,1-dimethylethyl)-α-methyl- 3-(3-tert-Butylphenyl)-2-methylpropanal m-BMHCA		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2015

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.0086 %	Category 7A	0.37 %
Category 2	0.094 %	Category 7B	0.37 %
Category 3	0.21 %	Category 8	0.094 %
Category 4	1.8 %	Category 9	0.96 %
Category 5A	0.45 %	Category 10A	0.96 %
Category 5B	0.28 %	Category 10B	3.1 %

3-(m-tert-Butylphenyl)-2-methylpropionaldehyde (m-BMHCA)

Category 5C	0.42 %	Category 11A	0.094 %
Category 5D	0.094 %	Category 11B	0.094 %
Category 6	0.0086 %	Category 12	64 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 3-(m-tert-Butylphenyl)-2-methylpropionaldehyde (m-BMHCA), which can be downloaded from the RIFM Safety

3-(m-tert-Butylphenyl)-2-methylpropionaldehyde (m-BMHCA)

Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 3-(m-tert-Butylphenyl)-2-methylpropionaldehyde (m-BMHCA) and recommends the limits for the 12 different product categories, which are the acceptable use levels of 3-(m-tert-Butylphenyl)-2-methylpropionaldehyde (m-BMHCA) in the various product categories.

REFERENCES:

The IFRA Standard on 3-(m-tert-Butylphenyl)-2-methylpropionaldehyde (m-BMHCA) is based on at least one of the following publications:

• The RIFM Safety Assessment on 3-(m-tert-Butylphenyl)-2-methylpropionaldehyde (m-BMHCA) if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Cade oil

CAS-No.:	8013-10-3 90046-02-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	Not applicable.
Synonyms:	Prohibition of the crude material: Juniper tar Specification for the distillates: Juniper tar oil Juniperus oxycedrus oil		

History:	Publication date:	2013 (Amendment 47)	Previous Publications:	1990 2003

Implementation dates:	For new submissions*:	August 10, 2013
	For existing fragrance compounds*:	August 10, 2014
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION / SPECIFICATION**

FRAGRANCE INGREDIENT PROHIBITION:	Crude cade oil derived by pyrolysis of the wood and twigs of Juniperus oxycedrus L. should not be used as a fragrance ingredient for any finished product application. Only rectified (purified) cade oils being in compliance with the limitations for polynuclear aromatic hydrocarbons (PAH) established by this IFRA Standard should be used.

Cade oil

FRAGRANCE INGREDIENT SPECIFICATION:	Limit content of polynuclear aromatic hydrocarbons (PAH) resulting from the use of rectified oils according to Good Manufacturing Practice. Benzopyrene and 1,2-Benzanthracene are to be used as markers for PAH. If used alone or in combination with rectified Birch tar oils, rectified Opoponax oil or rectified Styrax oil, the total concentration of both of the markers should not exceed 1 ppb in the final product.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**CARCINOGENICITY, GENOTOXICITY BY RELEASE OF POLYNUCLEAR HYDROCARBONS (PAH).**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Cade oil and recommends not to use Cade oil (crude) as or in fragrance ingredients in any finished product application.
In addition, they recommend to use Cade oil (distillates) according to the specification above mentioned.

REFERENCES:

The IFRA Standard on Cade oil is based on at least one of the following publications:

• The RIFM Safety Assessment on Cade oil if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y.,

Cade oil

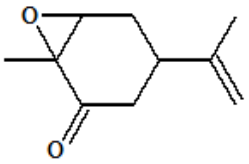
Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Carvone oxide

CAS-No.:	33204-74-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{19}H_{14}O_2$
		Structure:	
Synonyms:	Carvone epoxide 1,6-Epoxy-p-menth-8-en-2-one 1-Methyl-4-(1-methylvinyl)-7-oxabicyclo[4.1.0]heptan-2-one 7-Oxabicyclo[4.1.0]heptan-2-one, 1-methyl-4-(1-methylethenyl)-		

History:	Publication date:	2004 (Amendment 38)	Previous Publications:	2003

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Carvone oxide should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Carvone oxide

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Carvone oxide and recommends not to use Carvone oxide as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Carvone oxide is based on at least one of the following publications:

• The RIFM Safety Assessment on Carvone oxide is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

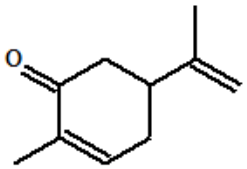
• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Letizia et al., 2000, Food and Chemical Toxicology, Volume 38, Supplement 3, Special Issue IX, pages S25-26.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Carvone

CAS-No.:	99-49-0 2244-16-8 6485-40-1 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{10}H_{14}O$
		Structure:	

Synonyms:	99-49-0 (Carvone):
	p-Mentha-6,8-dien-2-one;
	1-Methyl-4-isopropenyl-6-cyclohexen-2-one;
	2-Cyclohexen-1-one, 2-methyl-5-(1-methylethenyl)-;
	5-Isopropenyl-2-methylcyclohex-2-en-1-one;
	6,8(9)-p-Menthadien-2-one.
	
	2244-16-8 (d-Carvone):
	(S)-2-Methyl-5-(1-methylvinyl)cyclohex-2-en-1-one;
	d-p-Mentha-6,8(9)-dien-2-one;
	d-1-Methyl-4-isopropenyl-6-cyclohexen-2-one;
	2-Cyclohexen-1-one, 2-methyl-5-(1-methylethenyl)-, (S)-.
	
	6485-40-1 (l-Carvone):
	l-p-Mentha-1(6),8-dien-2-one;
	l-p-Mentha-6,8(9)-dien-2-one;
	l-1-Methyl-4-isopropenyl-6-cyclohexen-2-one;
	2-Cyclohexen-1-one, 2-methyl-5-(1-methylethenyl)-, (R)-;
	5-Isopropenyl-2-methylcyclohex-2-en-1-one.		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2008

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

Carvone

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.20 %	Category 7A	0.039 %
Category 2	0.060 %	Category 7B	0.039 %
Category 3	0.020 %	Category 8	0.013 %
Category 4	0.59 %	Category 9	0.18 %
Category 5A	0.20 %	Category 10A	0.18 %
Category 5B	0.039 %	Category 10B	0.43 %
Category 5C	0.059 %	Category 11A	0.013 %
Category 5D	0.013 %	Category 11B	0.013 %
Category 6	0.66 %	Category 12	17 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	SEE ANNEX I

ANNEX I

Natural Complex Substances (NCS) containing Carvone

Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
0.5	6485-40-1	Basil oil, chemotype estragole	Ocimum basilicum L.	8015-73-4	E2.12
0.2	99-49-0	Bucchu oil, crenulata	Agathosma crenulata (L.) Pill.	92346-82-2	E2.12
59	2244-16-8	Caraway seed oil	Carum carvi L.	8000-42-8	H2.12
0.06	2244-16-8	Carrot seed	Daucus carota L.	8015-88-1	H2.12

Carvone

		oil			
0.2	2244-16-8	Celery seed oil	Apium graveolens L.	8015-90-5	H2.12
0.6	6485-40-1	Cistus oil	Cistus ladaniferus L.	8016-26-0	E2.12
51	2244-16-8	Dill seed oil	Anethum graveolens L.	8006-75-5	H2.12
31.5	2244-16-8	Dill weed oil	Anethum graveolens L.	8006-75-5	E2.12
4	99-49-0	Gingergrass oil	Cymbopogon winterianus Jowitt	8023-92-5	E2.12
0.4	99-49-0	Marjoram oil, sweet	Origanum majorana L.	8015-01-8	E2.12
0.25	6485-40-1	Mentha arvensis oil	Mentha arvenis L.	68917-18-0	E2.24
1	99-49-0	Mentha longifolia oil	Mentha longifolia (L.) Huds.	90063-99-3	E2.12
0.2	6485-40-1	Myrtle oil	Myrtus communis L.	8008-46-6	E2.12
8	99-49-0	Nigella sativa oil	Nigella sativa L.	90064-32-7	H2.12
0.3	99-49-0	Olibanum sacra oil	Boswellia sacra	89957-98-2	K2.12
1	99-49-0	Orange peel oil, sweet terpeneless	Citrus sinensis (L.) Osbeck	68606-94-0	G2.29
1	99-49-0	Orange sweet oil folded	Citrus sinensis (L.) Osbeck	8008-57-9	G2.6
0.2	6485-40-1	Origanum oil (extractive)	Thymus capitatus L. Hoffmanns & Link	8007-11-2	E2.13
0.2	6485-40-1	Parsley herb oil	Petroselinum crispum (Mill.) Nyman ex A.W.Hill	8000-68-8	E2.12
0.1	99-49-0	Peppermint oil	Mentha piperita L.	8006-90-4	E2.12
0.1	99-49-0	Peppermint oil, terpeneless	Mentha piperita L.	68606-97-3	E2.29
67	6485-40-1	Spearmint oil	Mentha spicata L.	8008-79-5	E2.12
60	6485-40-1	Spearmint oil, 60%	Mentha gracilis, Sole	91770-24-0	E2.24
80	6485-40-1	Spearmint oil, 80%	Mentha gracilis, Sole	91770-24-0	E2.29
86.5	6485-40-1	Spearmint oil, terpeneless	Mentha spicata L.	68917-46-4	E2.29
67	6485-40-1	Spearmint, Mentha spicata crispa, extract	Mentha spicata L. spicata	8008-79-5	E2.13
0.2	6485-40-1	Yarrow oil	Achillea millefolium L.	8022-07-9	E2.12

Carvone

The natural contribution of Carvone is determined by the sum of the natural contributions of each of its isomers.

This is a non-exhaustive indicative list of typical natural presence for Carvone and is intended to be used in the absence of own analytical data. If analysis has shown that the level of the restricted ingredient in a natural complex substance is different from what is provided in this Annex I, then the analytically determined level should be used in place of the indicative level.

It should further be noted that natural complex substances themselves can be restricted by an IFRA Standard.

For a detailed list of natural contributions, please refer to the Annex I of IFRA Standards, publicly available on the IFRA website (www.ifrafragrance.org).

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Carvone, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Carvone and recommends the limits for the 12 different product categories, which are the acceptable use levels of Carvone in the various product categories.

REFERENCES:

The IFRA Standard on Carvone is based on at least one of the following publications:

• The RIFM Safety Assessment on Carvone if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

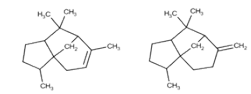
Carvone

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Cedrene

CAS-No.:	11028-42-5 469-61-4 546-28-1 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.	**Molecular formula:**	$C_{15}H_{24}$
		Structure:	CAS number 469-61-4: (α-Cedrene) CAS number 546-28-1: (β-Cedrene) 
Synonyms:	11028-42-5: Cedr-8-ene 469-61-4: α-Cedrene Cedr-8-ene 1H-3a,7-Methanoazulene, 2,3,4,7,8,8a-hexahydro-3,6,8,8-tetramethyl-, (3R-(3-α,3a-β,8a-α)] 546-28-1: β.-Cedrene 1H-3a,7-Methanoazulene, octahydro-3,8,8-trimethyl-6-methylene-, [3R-(3alpha,3abeta,7beta,8aalpha)]- Cedr-8(15)-ene		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.27 %	Category 7A	3.1 %

Cedrene

Category 2	0.080 %	Category 7B	3.1 %
Category 3	1.6 %	Category 8	0.16 %
Category 4	1.5 %	Category 9	2.9 %
Category 5A	0.38 %	Category 10A	11 %
Category 5B	0.38 %	Category 10B	11 %
Category 5C	0.38 %	Category 11A	5.8 %
Category 5D	0.38 %	Category 11B	5.8 %
Category 6	0.88 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX I**

ANNEX I

Natural Complex Substances (NCS) containing Cedrene

Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
0.4	469-61-4	Cananga oil	Cananga odorata (Lam.) Hook. f. & Thomson (forma macrophylla Steenis)	68606-83-7	F2.12
18	469-61-4	Cedarwood oil terpenes	Juniperus mexicana Schiede	68608-32-2	D2.30
5	546-28-1	Cedarwood oil terpenes	Juniperus mexicana Schiede	68608-32-2	D2.30
1.5	469-61-4	Cedarwood oil, Atlas	Cedrus atlantica (Endl.) Manetti ex Carriere	8023-85-6	D2.12
19.1	469-61-4	Cedarwood	Cupressus	1159574-01-2	D2.12

Cedrene

		oil, Chinese	funebris Endl.		
6	546-28-1	Cedarwood oil, Chinese	Cupressus funebris Endl.	1159574-01-2	D2.12
12	469-61-4	Cedarwood oil, Texas	Juniperus mexicana Schiede	68990-83-0	D2.12
3	546-28-1	Cedarwood oil, Texas	Juniperus mexicana Schiede	68990-83-0	D2.12
24.3	469-61-4	Cedarwood oil, Virginian	Juniperus virginiana L.	8000-27-9	D2.12
5.9	546-28-1	Cedarwood oil, Virginian	Juniperus virginiana L.	8000-27-9	D2.12
0.4	469-61-4	Cypress oil	Cupresssus sempervirens L.	8013-86-3	E2.12
0.4	546-28-1	Cypress oil	Cupresssus sempervirens L.	8013-86-3	E2.12
1.8	469-61-4	Helichrysum absolute	Helichrysum angustifolium DC.	8023-95-8	E2.1
0.05	469-61-4	Helichrysum oil	Helichrysum angustifolium DC.	8023-95-8	E2.12
0.4	469-61-4	Juniper berry oil	Juniperus communis L.	8002-68-4	G2.12
0.25	469-61-4	Pine needle, dwarf, oil	Pinus pumila (Pall.) Regel	8000-26-8	E2.12
0.2	469-61-4	Sandalwood oil, Australian	Santalum spicata (R.Br.) A.DC.	8024-35-9	D2.12
0.1	546-28-1	Verbena absolute	Lippia citriodora (L.) Kunth	8024-12-2	E2.1
0.5	469-61-4	Verbena absolute	Lippia citriodora (L.) Kunth	8024-12-2	E2.1
0.2	469-61-4	Vetiver oil (all origins)	Chrysopogon zizanioides (L.) Roberty	8016-96-4	A2.12
0.1	546-28-1	Vetiver oil (all origins)	Chrysopogon zizanioides (L.) Roberty	8016-96-4	A2.12
23	11028-42-5	Cedarwood oil terpenes	Juniperus mexicana Schiede	68608-32-2	D2.30
25.1	11028-42-5	Cedarwood oil, Chinese	Cupressus funebris Endl.	1159574-01-2	D2.12
15	11028-42-5	Cedarwood oil, Texas	Juniperus mexicana Schiede	68990-83-0	D2.12
30.2	11028-42-5	Cedarwood oil, Virginian	Juniperus virginiana L.	8000-27-9	D2.12
0.8	11028-42-5	Cypress oil	Cupresssus sempervirens L.	8013-86-3	E2.12
0.6	11028-42-5	Verbena absolute	Lippia citriodora (L.) Kunth	8024-12-2	E2.1
0.3	11028-42-5	Vetiver oil (all origins)	Chrysopogon zizanioides (L.) Roberty	8016-96-4	A2.12

The natural contribution of Cedrene is determined by the sum of the natural contributions of each of its isomers.

This is a non-exhaustive indicative list of typical natural presence for Cedrene and is intended to be used in the absence of own analytical data. If analysis has shown that the level of the restricted ingredient in a natural complex substance is different from what is provided in this Annex I, then the analytically determined level should be used in

Cedrene

place of the indicative level.
It should further be noted that natural complex substances themselves can be restricted by an IFRA Standard.
For a detailed list of natural contributions, please refer to the Annex I of IFRA Standards, publicly available on the IFRA website (www.ifrafragrance.org).

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Cedrene, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Cedrene and recommends the limits for the 12 different product categories, which are the acceptable use levels of Cedrene in the various product categories.

REFERENCES:

The IFRA Standard on Cedrene is based on at least one of the following publications:

• The RIFM Safety Assessment on Cedrene if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

Cedrene

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Chenopodium oil

CAS-No.:	8006-99-3 8024-11-1 89997-47-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	Not applicable.
Synonyms:	American wormseed oil Chenopodium ambrosioides L. var anthelminticum		

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Chenopodium oil should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Chenopodium oil

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**INSUFFICIENT DATA**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Chenopodium oil and recommends not to use Chenopodium oil as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:

The IFRA Standard on Chenopodium oil is based on at least one of the following publications:

• The RIFM Safety Assessment on Chenopodium oil if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

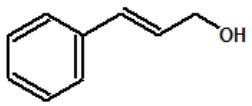
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Cinnamic alcohol

CAS-No.:	104-54-1 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_9H_{10}O$
		Structure:	
Synonyms:	Cinnamyl alcohol 3-Phenylallyl alcohol 3-Phenyl-2-propen-1-ol 2-Propen-1-ol, 3-phenyl- Styrone Styryl alcohol Zimtalcohol Styryl carbinol		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1987 1992 2002 2007 2008

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.22 %	Category 7A	0.25 %
Category 2	0.067 %	Category 7B	0.25 %
Category 3	0.25 %	Category 8	0.085 %

Cinnamic alcohol

Category 4	1.2 %	Category 9	0.76 %
Category 5A	0.32 %	Category 10A	0.76 %
Category 5B	0.25 %	Category 10B	2.0 %
Category 5C	0.25 %	Category 11A	0.085 %
Category 5D	0.085 %	Category 11B	0.085 %
Category 6	0.13 %	Category 12	51 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX I**

ANNEX I

Natural Complex Substances (NCS) containing Cinnamic alcohol

Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
0.5	104-54-1	Cassia bark extract	Cinnamomum cassia Blume	8007-80-5	C2.13
0.2	104-54-1	Cassia oil	Cinnamomum aromaticum Nees	8007-80-5	E2.12
0.1	104-54-1	Cinnamon bark extract	Cinnamomum zeylanicum Blume	8015-91-6	C2.13
0.3	104-54-1	Cinnamon bark oil	Cinnamomum zeylanicum Blume	8015-91-6	C2.12
0.5	104-54-1	Cinnamon bark oil, Laos	Cinnamomum loureiroi Nees	97659-68-2	C2.12
11.2	104-54-1	Hyacinth absolute	Hyacinthus orientalis L.	8023-94-7	F2.1
0.15	104-54-1	Jasmine sambac absolute	Jasminum sambac (L.) Aiton	103798-23-6	F2.24
0.8	104-54-1	Styrax extract	Liquidambar styraciflua L.	8046-19-3	K2.13

Cinnamic alcohol

1.5	104-54-1	Styrax oil, Honduras	Liquidambar styraciflua L.	8046-19-3	K2.9
0.04	104-54-1	Tolu, balsam, extract	Myroxylon balsamum (L.) Harms.	8024-03-1	K2.13
0.03	104-54-1	Tolu, balsam, gum	Myroxylon balsamum (L.) Harms.	8024-03-1	K2.16

This is a non-exhaustive indicative list of typical natural presence for Cinnamic alcohol and is intended to be used in the absence of own analytical data. If analysis has shown that the level of the restricted ingredient in a natural complex substance is different from what is provided in this Annex I, then the analytically determined level should be used in place of the indicative level.
It should further be noted that natural complex substances themselves can be restricted by an IFRA Standard.
For a detailed list of natural contributions, please refer to the Annex I of IFRA Standards, publicly available on the IFRA website (www.ifrafragrance.org).

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Cinnamic alcohol, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Cinnamic alcohol and recommends the limits for the 12 different product categories, which are the acceptable use levels of Cinnamic alcohol in the various product categories.

REFERENCES:

The IFRA Standard on Cinnamic alcohol is based on at least one of the following publications:

• The RIFM Safety Assessment on Cinnamic alcohol if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G.,

Cinnamic alcohol

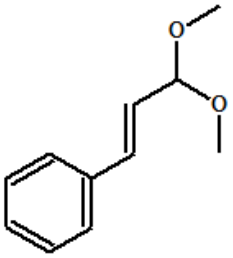
Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Cinnamic aldehyde dimethyl acetal

CAS-No.:	4364-06-1 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{11}H_{14}O_2$
		Structure:	
Synonyms:	Benzene, (3,3-dimethoxy-1-propenyl)- (3,3-Dimethoxypropen-1-yl)benzene (3,3-Dimethoxyprop-1-en-1-yl)benzene 3-Phenyl-2-propenal dimethyl acetal		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2009

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.063 %	Category 7A	0.72 %
Category 2	0.019 %	Category 7B	0.72 %
Category 3	0.38 %	Category 8	0.037 %
Category 4	0.35 %	Category 9	0.69 %
Category 5A	0.089 %	Category 10A	2.5 %

Cinnamic aldehyde dimethyl acetal

Category 5B	0.089 %	Category 10B	2.5 %
Category 5C	0.089 %	Category 11A	1.4 %
Category 5D	0.089 %	Category 11B	1.4 %
Category 6	0.21 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Cinnamic aldehyde dimethyl acetal

Additional information is available in the RIFM safety assessment for Cinnamic aldehyde dimethyl acetal, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Cinnamic aldehyde dimethyl acetal and recommends the limits for the 12 different product categories, which are the acceptable use levels of Cinnamic aldehyde dimethyl acetal in the various product categories.

REFERENCES:

The IFRA Standard on Cinnamic aldehyde dimethyl acetal is based on at least one of the following publications:

• The RIFM Safety Assessment on Cinnamic aldehyde dimethyl acetal if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

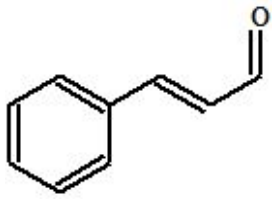
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Cinnamic aldehyde

CAS-No.:	104-55-2 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	C_9H_8O
		Structure:	
Synonyms:	Cinnamal Cinnamaldehyde Phenylacrolein 3-Phenyl-2-propena 3-Phenyl-2-propen-1-a Cassia aldehyde		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1978 2004 2006 2007 2008 2013

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.045 %	Category 7A	0.17 %
Category 2	0.014 %	Category 7B	0.17 %
Category 3	0.021 %	Category 8	0.014 %
Category 4	0.25 %	Category 9	0.49 %

Cinnamic aldehyde

Category 5A	0.064 %	Category 10A	0.49 %
Category 5B	0.042 %	Category 10B	1.8 %
Category 5C	0.064 %	Category 11A	0.014 %
Category 5D	0.014 %	Category 11B	0.014 %
Category 6	0.15 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX I AND ANNEX II**

ANNEX I

Natural Complex Substances (NCS) containing Cinnamic aldehyde

Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
44	104-55-2	Cassia bark extract	Cinnamomum cassia Blume	8007-80-5	C2.13
80	104-55-2	Cassia oil	Cinnamomum aromaticum Nees	8007-80-5	E2.12
38	104-55-2	Cinnamon bark extract	Cinnamomum zeylanicum Blume	8015-91-6	C2.13
75	104-55-2	Cinnamon bark oil	Cinnamomum zeylanicum Blume	8015-91-6	C2.12
95	104-55-2	Cinnamon bark oil, Laos	Cinnamomum loureiroi Nees	97659-68-2	C2.12
1.5	104-55-2	Cinnamon leaf oil	Cinnamomum zeylanicum Blume	8015-91-6	E2.12
0.3	104-55-2	Hyacinth absolute	Hyacinthus orientalis L.	8023-94-7	F2.1
0.05	104-55-2	Styrax extract	Liquidambar styraciflua L.	8046-19-3	K2.13
0.1	104-55-2	Styrax oil, Honduras	Liquidambar styraciflua L.	8046-19-3	K2.9
0.5	104-55-2	Tolu,	Myroxylon	8024-03-1	K2.13

Cinnamic aldehyde

		balsam, extract	balsamum (L.) Harms.		
0.1	104-55-2	Tolu, balsam, gum	Myroxylon balsamum (L.) Harms.	8024-03-1	K2.16

This is a non-exhaustive indicative list of typical natural presence for Cinnamic aldehyde and is intended to be used in the absence of own analytical data. If analysis has shown that the level of the restricted ingredient in a natural complex substance is different from what is provided in this Annex I, then the analytically determined level should be used in place of the indicative level.
It should further be noted that natural complex substances themselves can be restricted by an IFRA Standard.
For a detailed list of natural contributions, please refer to the Annex I of IFRA Standards, publicly available on the IFRA website (www.ifrafragrance.org).

ANNEX II				
Cinnamic aldehyde	**CAS number (Aldehyde)**	**Schiff base**	**CAS number (Schiff base)**	**Level of restricted aldehyde in the Schiff base (%)**
Cinnamic aldehyde	104-55-2	Cinnamic aldehyde methyl anthranilate	94386-48-8	49.8

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Cinnamic aldehyde, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Cinnamic aldehyde and recommends the limits for the 12 different product categories, which are the acceptable use levels of Cinnamic aldehyde in the various product categories.

Cinnamic aldehyde

REFERENCES:

The IFRA Standard on Cinnamic aldehyde is based on at least one of the following publications:

• The RIFM Safety Assessment on Cinnamic aldehyde if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

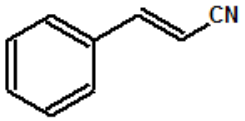
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Cinnamyl nitrile

CAS-No.:	1885-38-7 4360-47-8 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	C_9H_7N
		Structure:	
Synonyms:	Cinnamonitrile (E) trans-.β.-Phenylacrylonitrile 2-Propenenitrile, 3-phenyl-, (E)-		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2002 2008

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.077 %	Category 7A	0.88 %
Category 2	0.023 %	Category 7B	0.88 %
Category 3	0.46 %	Category 8	0.045 %
Category 4	0.43 %	Category 9	0.84 %
Category 5A	0.11 %	Category 10A	3.0 %
Category 5B	0.11 %	Category 10B	3.0 %

Cinnamyl nitrile

Category 5C	0.11 %	Category 11A	1.7 %
Category 5D	0.11 %	Category 11B	1.7 %
Category 6	0.25 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Cinnamyl nitrile, which can be downloaded from the RIFM Safety Assessment Sheet Database:

Cinnamyl nitrile

http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Cinnamyl nitrile and recommends the limits for the 12 different product categories, which are the acceptable use levels of Cinnamyl nitrile in the various product categories.

REFERENCES:

The IFRA Standard on Cinnamyl nitrile is based on at least one of the following publications:

• The RIFM Safety Assessment on Cinnamyl nitrile if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

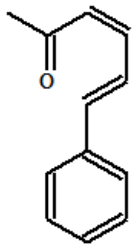
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Cinnamylidene acetone

CAS-No.:	4173-44-8 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{12}H_{12}O$
		Structure:	
Synonyms:	3,5-Hexadien-2-one, 6-phenyl- Methyl 4-phenyl-1,3-butadienyl ketone 1-Phenyl-3,5-hexadien-5-one 6-Phenyl-3,5-hexadien-2-on		

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Cinnamylidene acetone should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA**

Cinnamylidene acetone

	STANDARDS)

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	INSUFFICIENT DATA

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Cinnamylidene acetone and recommends not to use Cinnamylidene acetone as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:

The IFRA Standard on Cinnamylidene acetone is based on at least one of the following publications:

• The RIFM Safety Assessment on Cinnamylidene acetone if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

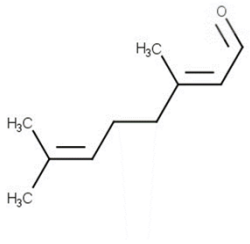
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Citral

CAS-No.:	5392-40-5 141-27-5 106-26-3 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{10}H_{16}O$
		Structure:	
Synonyms:	3,7-Dimethyl-2,6-octadienal Geranial (trans-citral) Neral Geranial Lemarome (commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2002 2008 2013

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.11 %	Category 7A	0.20 %
Category 2	0.032 %	Category 7B	0.20 %
Category 3	0.10 %	Category 8	0.051 %
Category 4	0.60 %	Category 9	1.2 %
Category 5A	0.15 %	Category 10A	1.2 %

Citral

Category 5B	0.15 %	Category 10B	4.2 %
Category 5C	0.15 %	Category 11A	0.051 %
Category 5D	0.051 %	Category 11B	0.051 %
Category 6	0.35 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX I AND ANNEX II**

ANNEX I

Natural Complex Substances (NCS) containing Citral

Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
58	5392-40-5	Balm oil	Melissa officinalis L.	8014-71-9	E2.12
0.1	5392-40-5	Bergamot oil terpenes	Citrus bergamia (Risso) Wright & Arn.	68917-80-6	G2.30
0.7	5392-40-5	Bergamot oil, expressed	Citrus bergamia (Risso) Wright & Arn.	8007-75-8	G2.5
0.43	5392-40-5	Bergamot oil, furocoumarin free	Citrus bergamia (Risso) Wright & Arn.	68648-33-9	G2.33
0.35	5392-40-5	Cardamom seed extract	Elettaria cardamomum (L.) Maton	8000-66-6	H2.13
0.5	5392-40-5	Cardamom seed oil	Elettaria cardamomum (L.) Maton	8000-66-6	H2.12
0.03	5392-40-5	Cassie absolute	Vachellia farnesiana (L.) Willd.	8023-82-3	F2.1
5	5392-40-5	Citron oil	Citrus medica L.	68991-25-3	G2.5
0.8	5392-40-5	Citronella oil,	Cymbopogon	8000-29-1	E2.12

Citral

		Ceylon type	nardus (L.) Rendle		
0.8	5392-40-5	Citronella oil, Java type	Cymbopogon winterianus Jowitt	8000-29-1	E2.12
0.01	5392-40-5	Citrus junos oil	Citrus junos Siebold ex. Tanaka ichangensis × reticulata var. austera (reticulata var. austera) (Rutaceae)	233683-84-6	G2.5
0.7	5392-40-5	Cyperus articulatus oil	Cyperus articulatus L.	799259-56-6	A2.12
1.5	5392-40-5	Eucalyptus radiata oil	Eucalyptus radiata Sieber ex DC oil	92201-64-4	E2.12
0.5	5392-40-5	Geranium oil	Pelargonium graveolens l'Hertier ex Aiton	8000-46-2	E2.12
0.5	5392-40-5	Geranium oil African	Pelargonium odoratissimum L'Heritier	8000-46-2	E2.12
0.5	5392-40-5	Geranium oil, terpene-free	Pelargonium graveolens l'Hertier ex Aiton	68916-44-9	E2.29
2.8	5392-40-5	Ginger oil	Zingiber officinale Rosc.	8007-08-7	A2.12
0.8	5392-40-5	Ginger oleoresin	Zingiber officinale Rosc.	8007-08-7	A2.21
0.1	5392-40-5	Grapefruit oil	Citrus paradisi Macf.	8016-20-4	G2.5
1.2	5392-40-5	Grapefruit oil, folded	Citrus paradisi Macf.	68916-46-1	G2.6
10	5392-40-5	Grapefruit oil, terpeneless	Citrus paradisi Macf.	68916-46-1	G2.29
10	5392-40-5	Kumquat oil, Fortunella margarita	Fortunella (Lour.) Swingle	938464-05-2	G2.5
0.7	5392-40-5	Lemon extract	Citrus limon (L.) Burm. f.	84929-31-7	G2.20
12	5392-40-5	Lemon oil folded (5X)	Citrus limon (L.) Burm. f.	8008-56-8	G2.6
25.4	5392-40-5	Lemon oil folded (10X)	Citrus limon (L.) Burm. f.	8008-56-8	G2.6
40	5392-40-5	Lemon oil terpeneless	Citrus limon (L.) Burm. f.	68648-39-5	G2.29
2.1	5392-40-5	Lemon oil, distilled	Citrus limon (L.) Burm. f.	8008-56-8	G2.24
3.5	5392-40-5	Lemon oil, expressed	Citrus limon (L.) Burm. f.	8008-56-8	G2.5
2.1	5392-40-5	Lemon oil, furocoumarin free	Citrus limon (L.) Burm. f.	68916-89-2	G2.33
0.51	5392-40-5	Lemon oil, terpenes	Citrus limon (L.) Burm. f.	68917-33-9	G2.30
1.8	5392-40-5	Lemon oil. essence	Citrus limon (L.) Burm. f.	8008-56-8	G2.10
1	5392-40-5	Lemongrass	Cymbopogon spp.	72869-82-0	E2.30

Citral

		oil terpenes			
73	5392-40-5	Lemongrass oil, East Indian	Cymbopogon flexuosus (Nees ex Steudel) Will. Watson	8007-02-1	E2.12
73	5392-40-5	Lemongrass oil, West Indian	Cymbopogon citratus (DC) Stapf.	8007-02-1	E2.12
0.2	5392-40-5	Lime oil distilled	Citrus aurantifolia (Swingle)	8008-26-2	G2.12
0.05	5392-40-5	Lime oil terpenes	Citrus aurantifolia (Swingle)	68917-71-5	G2.30
7	5392-40-5	Lime oil, cold pressed, furocoumarin free	Citrus aurantifolia (Christman) Swingle	68916-83-6	G2.33
7	5392-40-5	Lime oil, expressed	Citrus aurantifolia (Christman) Swingle	8008-26-2	G2.5
0.22	5392-40-5	Lime oil, terpeneless	Citrus aurantifolia (Swingle)	68916-84-7	G2.29
20	5392-40-5	Lime oil. expressed folded (2-5X)	Citrus aurantifolia (Christman) Swingle	93685-55-3	G2.6
0.15	5392-40-5	Lime oil. folded (2-5X)	Citrus aurantifolia (Swingle)	8008-26-2	G2.6
69	5392-40-5	Litsea cubeba oil	Litsea Cubeba(Lour.) Pers.	68855-99-2	G2.12
10.5	5392-40-5	Mandarin oil, terpeneless	Citrus reticulata Blanco	68917-20-4	G2.29
0.2	5392-40-5	Marjoram oil, Spanish	Origanum mastichina L.	8016-33-9	E2.12
5	5392-40-5	Meyer lemon oil. cold pressed	Citrus x meyerii	1370641-98-7	G2.5
0.1	5392-40-5	Murcote oil, expressed	Citrus reticulata spp. murcote, Swingle	93686-22-7	G2.5
0.15	5392-40-5	Orange essence oil	Citrus sinensis (L.) Osbeck	68514-75-0	G2.10
0.2	5392-40-5	Orange flower oil, bitter (neroli and neroli bigarade)	Citrus aurantium L. spp. Amara Link	8016-38-4	F2.12
0.1	5392-40-5	Orange oil, bitter	Citrus aurantium L. spp. Amara Link	68916-04-1	G2.5
0.15	5392-40-5	Orange oil, sweet, psoralen-free	Citrus sinensis (L.) Osbeck	8008-57-9	G2.33
10	5392-40-5	Orange peel oil, bitter, terpene-free	Citrus aurantium L. spp. Amara Link	68916-02-9	G2.29
5	5392-40-5	Orange peel oil, sweet terpeneless	Citrus sinensis (L.) Osbeck	68606-94-0	G2.29

Citral

0.15	5392-40-5	Orange peel, sweet oil	Citrus sinensis (L.) Osbeck	8008-57-9	G2.5
0.1	5392-40-5	Orange peel, sweet, extract	Citrus sinensis (L.) Osbeck	8008-57-9	G2.13
7	5392-40-5	Orange sweet oil folded	Citrus sinensis (L.) Osbeck	8008-57-9	G2.6
0.3	5392-40-5	Origanum oil (extractive)	Thymus capitatus L. Hoffmanns & Link	8007-11-2	E2.13
0.6	5392-40-5	Palmarosa oil	Cymbopogon martinii (Roxb.) Wats	8014-19-5	E2.12
5	5392-40-5	Persian lime oil, expressed	Citrus latifolia Tanaka	8008-26-2	G2.5
0.3	5392-40-5	Petitgrain bergamot oil	Citrus bergamia (Risso) Wright & Arn.	8007-75-8	E2.12
0.65	5392-40-5	Petitgrain bigarade oil	Citrus aurantium L. spp. Amara Link	8014-17-3	E2.12
23	5392-40-5	Petitgrain lemon oil	Citrus limon (L.) Burm. f.	8048-51-9	E2.12
0.08	5392-40-5	Petitgrain mandarin oil	Citrus reticulata Blanco	8014-17-3	E2.12
0.16	5392-40-5	Petitgrain mandarin oil terpeneless	Citrus reticulata Blanco	84929-38-4	E2.29
0.05	5392-40-5	Rose absolute	Rosa x damascena Mill.	90106-38-0	F2.1
0.16	5392-40-5	Rose concrete	Rosa x damascena Mill.	90106-38-0	F2.7
1.4	5392-40-5	Rose oil	Rosa x damascena Mill.	8007-01-0	F2.12
0.1	5392-40-5	Tangelo oil, expressed	Citrus x tangelo Ingram and Moore	72869-73-9	G2.5
0.1	5392-40-5	Tangerine oil	Citrus reticulata blanco	8016-85-1	G2.5
10	5392-40-5	Tangerine oil terpeneless	Citrus reticulata blanco	68607-01-2	G2.29
0.1	5392-40-5	Tangor oil, expressed	Citrus reticulata x Citrus sinensis	93686-22-7	G2.5
25.6	5392-40-5	Verbena absolute	Lippia citriodora (L.) Kunth	8024-12-2	E2.1

This is a non-exhaustive indicative list of typical natural presence for Citral and is intended to be used in the absence of own analytical data. If analysis has shown that the level of the restricted ingredient in a natural complex substance is different from what is provided in this Annex I, then the analytically determined level should be used in place of the indicative level.
It should further be noted that natural complex substances themselves can be restricted by an IFRA Standard.
For a detailed list of natural contributions, please refer to the Annex I of IFRA Standards, publicly available on the IFRA website (www.ifrafragrance.org).

ANNEX II

Citral

Citral	CAS number (Aldehyde)	Schiff base	CAS number (Schiff base)	Level of restricted aldehyde in the Schiff base (%)
Citral	5392-40-5	Citral-methyl anthranilate	67801-47-2	53.3

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Citral, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Citral and recommends the limits for the 12 different product categories, which are the acceptable use levels of Citral in the various product categories.

REFERENCES:

The IFRA Standard on Citral is based on at least one of the following publications:

• The RIFM Safety Assessment on Citral if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2:

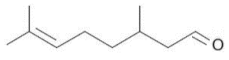
Citral

Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Citronellal

CAS-No.:	106-23-0 5949-05-3 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{10}H_{18}O$
		Structure:	
Synonyms:	106-23-0: 2,3-Dihydrocitral 3,7-Dimethyl-6-octenal 3,7-Dimethyloct-6-enal 6-Octenal, 3,7-dimethyl- Citronellal Extra (Commercial name) Rhodinal (Commercial name) 5949-05-3: 6-Octenal, 3,7-dimethyl-, (3S)- l-Citronellal		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.41 %	Category 7A	0.077 %
Category 2	0.16 %	Category 7B	0.077 %

Citronellal

Category 3	0.026 %	Category 8	0.017 %
Category 4	0.49 %	Category 9	1.4 %
Category 5A	0.33 %	Category 10A	1.4 %
Category 5B	0.051 %	Category 10B	2.3 %
Category 5C	0.10 %	Category 11A	0.017 %
Category 5D	0.017 %	Category 11B	0.017 %
Category 6	0.82 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX I**

ANNEX I

Natural Complex Substances (NCS) containing Citronellal

Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
1.3	106-23-0	Balm oil	Melissa officinalis L.	8014-71-9	E2.12
0.2	106-23-0	Citron oil	Citrus medica L.	68991-25-3	G2.5
4.5	106-23-0	Citronella oil, Ceylon type	Cymbopogon nardus (L.) Rendle	8000-29-1	E2.12
36	106-23-0	Citronella oil, Java type	Cymbopogon winterianus Jowitt	8000-29-1	E2.12
11.7	106-23-0	Citrus hystrix extract	Citrus hystrix DC	91771-50-5	G2.5
0.1	106-23-0	Clementine oil	Citrus clementina Hort. Ex Tan	93686-22-7	G2.5
75	106-23-0	Eucalyptus citriodora oil	Corymbia citriodora (Hook.) K.D. Hill & L.A.	85203-56-1	E2.12

Citronellal

			Johnson		
0.6	106-23-0	Fir balsam oleoresin	Abies balsamea (L.) Mill.	8024-15-5	K2.16
0.15	106-23-0	Geranium oil	Pelargonium graveolens l'Hertier ex Aiton	8000-46-2	E2.12
0.4	106-23-0	Ginger oil	Zingiber officinale Rosc.	8007-08-7	A2.12
0.1	106-23-0	Grapefruit oil	Citrus paradisi Macf.	8016-20-4	G2.5
0.1	106-23-0	Grapefruit oil, folded	Citrus paradisi Macf.	68916-46-1	G2.6
3.2	106-23-0	Grapefruit oil, terpeneless	Citrus paradisi Macf.	68916-46-1	G2.29
3	106-23-0	Kumquat oil, Fortunella margarita	Fortunella (Lour.) Swingle	938464-05-2	G2.5
0.03	106-23-0	Lemon extract	Citrus limon (L.) Burm. f.	84929-31-7	G2.20
1	106-23-0	Lemon oil folded (5X)	Citrus limon (L.) Burm. f.	8008-56-8	G2.6
2	106-23-0	Lemon oil folded (10X)	Citrus limon (L.) Burm. f.	8008-56-8	G2.6
3	106-23-0	Lemon oil terpeneless	Citrus limon (L.) Burm. f.	68648-39-6	G2.29
0.1	106-23-0	Lemon oil, distilled	Citrus limon (L.) Burm. f.	8008-56-8	G2.24
0.1	106-23-0	Lemon oil, expressed	Citrus limon (L.) Burm. f.	8008-56-8	G2.5
0.1	106-23-0	Lemon oil, furocoumarin free	Citrus limon (L.) Burm. f.	68916-89-2	G2.33
0.1	106-23-0	Lemon oil. essence	Citrus limon (L.) Burm. f.	8008-56-8	G2.10
0.7	106-23-0	Lemongrass oil, East Indian	Cymbopogon flexuosus (Nees ex Steudel) Will. Watson	8007-02-1	E2.12
0.3	106-23-0	Lemongrass oil, West Indian	Cymbopogon citratus (DC) Stapf.	8007-02-1	E2.12
1.4	106-23-0	Lime oil, cold pressed, furocoumarin free	Citrus aurantifolia (Christman) Swingle	68916-83-6	G2.33
1.4	106-23-0	Lime oil, expressed	Citrus aurantifolia (Christman) Swingle	8008-26-2	G2.5
5	106-23-0	Lime oil. expressed folded (2-5X)	Citrus aurantifolia (Christman) Swingle	93685-55-3	G2.6
1.1	106-23-0	Litsea cubeba oil	Litsea Cubeba(Lour.) Pers.	68855-99-2	G2.12
3	106-23-0	Mandarin oil, terpeneless	Citrus reticulata Blanco	68917-20-4	G2.29
0.2	106-23-0	Meyer lemon oil. cold	Citrus x meyerii	1370641-98-7	G2.5

Citronellal

		pressed			
0.1	106-23-0	Murcote oil, expressed	Citrus reticulata spp. murcote, Swingle	93686-22-7	G2.5
2	106-23-0	Orange peel oil, sweet terpeneless	Citrus sinensis (L.) Osbeck	68606-94-0	G2.29
2	106-23-0	Orange sweet oil folded	Citrus sinensis (L.) Osbeck	8008-57-9	G2.6
1.4	106-23-0	Persian lime oil, expressed	Citrus latifolia Tanaka	8008-26-2	G2.5
0.05	106-23-0	Petitgrain bigarade oil	Citrus aurantium L. spp. Amara Link	8014-17-3	E2.12
1	106-23-0	Petitgrain lemon oil	Citrus limon (L.) Burm. f.	8048-51-9	E2.12
0.05	106-23-0	Petitgrain mandarin oil	Citrus reticulata Blanco	8014-17-3	E2.12
0.1	106-23-0	Petitgrain mandarin oil terpeneless	Citrus reticulata Blanco	84929-38-4	E2.29
0.1	106-23-0	Rose oil	Rosa x damascena Mill.	8007-01-0	F2.12
0.1	106-23-0	Tangelo oil, expressed	Citrus x tangelo Ingram and Moore	72869-73-9	G2.5
0.1	106-23-0	Tangerine oil	Citrus reticulata blanco	8016-85-1	G2.5
3	106-23-0	Tangerine oil terpeneless	Citrus reticulata blanco	68607-01-2	G2.29
0.1	106-23-0	Tangor oil, expressed	Citrus reticulata x Citrus sinensis	93686-22-7	G2.5

This is a non-exhaustive indicative list of typical natural presence for Citronellal and is intended to be used in the absence of own analytical data. If analysis has shown that the level of the restricted ingredient in a natural complex substance is different from what is provided in this Annex I, then the analytically determined level should be used in place of the indicative level.
It should further be noted that natural complex substances themselves can be restricted by an IFRA Standard.
For a detailed list of natural contributions, please refer to the Annex I of IFRA Standards, publicly available on the IFRA website (www.ifrafragrance.org).

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal

Citronellal

sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Citronellal, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Citronellal and recommends the limits for the 12 different product categories, which are the acceptable use levels of Citronellal in the various product categories.

REFERENCES:

The IFRA Standard on Citronellal is based on at least one of the following publications:

• The RIFM Safety Assessment on Citronellal if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

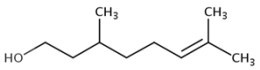
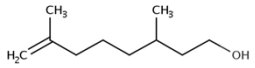
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Citronellol

CAS-No.:	106-22-9 1117-61-9 26489-01-0 6812-78-8 141-25-3 7540-51-4 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.	**Molecular formula:**	$C_{10}H_{20}O$
		Structure:	α-Citronellol:  β-Citronellol: 
Synonyms:	106-22-9: 3,7-Dimethyl-6-octen-1-ol 6-Octen-1-ol, 3,7-dimethyl- Citronellol dl-Citronellol Rhodinol pure (commercial name) 1117-61-9: 3,7-Dimethyloct-6-en-1-ol 6-Octen-1-ol, 3,7-dimethyl-, (R)- (R)-3,7-Dimethyloct-6-en-1-ol (+)-ß-Citronellol (+)-(R)-Citronellol 26489-01-0: 6-Octen-1-ol, 3,7-dimethyl-,(+/-)- 6812-78-8: 3,7-Dimethyloct-7-en-1-ol 7-Octen-1-ol, 3,7-dimethyl-,(S)- 3,7-Dimethyl-(6-or 7-)octen-1-ol 3,7-Dimethyl-7-octen-1-ol 141-25-3: 3,7-Dimethyloct-7-en-1-ol 7-Octen-1-ol, 3,7-dimethyl- (isomer unspecified) α-Citronellol Rhodinol (commercial name) 7540-51-4: 3,7-Dimethyloct-6-en-1-ol (-)-3,7-Dimethyloct-6-en-1-ol (S)-3,7-Dimethyl-6-octen-1-ol 6-Octen-1-ol, 3,7-dimethyl-, (S)-		

Citronellol

	l-Citronellol

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2007

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	2.2 %	Category 7A	25 %
Category 2	0.67 %	Category 7B	25 %
Category 3	13 %	Category 8	1.3 %
Category 4	12 %	Category 9	24 %
Category 5A	3.2 %	Category 10A	87 %
Category 5B	3.2 %	Category 10B	87 %
Category 5C	3.2 %	Category 11A	48 %
Category 5D	3.2 %	Category 11B	48 %
Category 6	7.3 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must

Citronellol

	not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	SEE ANNEX I

ANNEX I

Natural Complex Substances (NCS) containing Citronellol

Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
0.15	106-22-9	Balm oil	Melissa officinalis L.	8014-71-9	E2.12
6	106-22-9	Citronella oil, Ceylon type	Cymbopogon nardus (L.) Rendle	8000-29-1	E2.12
11	106-22-9	Citronella oil, Java type	Cymbopogon winterianus Jowitt	8000-29-1	E2.12
3	106-22-9	Citrus hystrix extract	Citrus hystrix DC	91771-50-5	G2.5
10	106-22-9	Eucalyptus citriodora oil	Corymbia citriodora (Hook.) K.D. Hill & L.A. Johnson	85203-56-1	E2.12
10.6	7540-51-4	Geranium absolute	Pelargonium graveolens l'Hertier ex Aiton	8000-46-2	E2.1
21.1	7540-51-4	Geranium oil	Pelargonium graveolens l'Hertier ex Aiton	8000-46-2	E2.12
33	7540-51-4	Geranium oil African	Pelargonium odoratissimum L'Heritier	8000-46-2	E2.12
40	7540-51-4	Geranium oil, terpene-free	Pelargonium graveolens l'Hertier ex Aiton	68916-44-9	E2.29
0.6	106-22-9	Lemongrass oil, East Indian	Cymbopogon flexuosus (Nees ex Steudel) Will. Watson	8007-02-1	E2.12
0.15	106-22-9	Litsea cubeba oil	Litsea Cubeba(Lour.) Pers.	68855-99-2	G2.12
0.1	106-22-9	Marjoram oil, Spanish	Origanum mastichina L.	8016-33-9	E2.12
0.1	106-22-9	Niaouli oil	Melaleuca viridiflora Sol. ex Gaertn.	8014-68-4	E2.12
0.2	106-22-9	Petitgrain bergamot oil	Citrus bergamia (Risso) Wright & Arn.	8007-75-8	E2.12
6	106-22-9	Rose absolute	Rosa x damascena Mill.	90106-38-0	F2.1

Citronellol

4.7	106-22-9	Rose concrete	Rosa x damascena Mill.	90106-38-0	F2.7
34	106-22-9	Rose oil	Rosa x damascena Mill.	8007-01-0	F2.12
1.2	106-22-9	Rose water stronger	Rosa x centifolia L.	8007-01-0	F2.54
0.2	106-22-9	Spruce oil, Black	Picea mariana (Mill.) Britton	8008-80-8	E2.12
0.28	106-22-9	Spruce oil, White	Picea abies (L.) H.Karst.	91770-69-3	E2.12
0.45	106-22-9	Verbena absolute	Lippia citriodora (L.) Kunth	8024-12-2	E2.1
2.5	106-22-9	Verbena oil	Lippia citriodora (L.) Kunth	8024-12-2	E2.12
0.1	106-22-9	Zanthoxylum piperitum extract	Zanthoxylum piperitum	102242-62-6	G2.13

This is a non-exhaustive indicative list of typical natural presence for Citronellol and is intended to be used in the absence of own analytical data. If analysis has shown that the level of the restricted ingredient in a natural complex substance is different from what is provided in this Annex I, then the analytically determined level should be used in place of the indicative level.
It should further be noted that natural complex substances themselves can be restricted by an IFRA Standard.
For a detailed list of natural contributions, please refer to the Annex I of IFRA Standards, publicly available on the IFRA website (www.ifrafragrance.org).

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Citronellol, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Citronellol and recommends the limits for the 12 different product categories, which are the acceptable use levels of Citronellol in the various product categories.

Citronellol

REFERENCES:

The IFRA Standard on Citronellol is based on at least one of the following publications:

• The RIFM Safety Assessment on Citronellol if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Citrus oils and other furocoumarins containing essential oils

CAS-No.:	Not applicable. The scope of this Standard includes any CAS number(s) used to identify these fragrance ingredients.	**Molecular formula:**	Not applicable.
Synonyms:	Not applicable.		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1996 2015

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.0015 % (5-MOP)	Category 7A	No Restriction
Category 2	0.0015 % (5-MOP)	Category 7B	0.0015 % (5-MOP)
Category 3	0.0015 % (5-MOP)	Category 8	0.0015 % (5-MOP)
Category 4	0.0015 % (5-MOP)	Category 9	No Restriction
Category 5A	0.0015 % (5-MOP)	Category 10A	No Restriction
Category 5B	0.0015 % (5-MOP)	Category 10B	0.0015 % (5-MOP)
Category 5C	0.0015 % (5-MOP)	Category 11A	No Restriction
Category 5D	0.0015 % (5-MOP)	Category 11B	0.0015 % (5-MOP)

Citrus oils and other furocoumarins containing essential oils

Category 6	0.0015 % (5-MOP)	Category 12	No Restriction

Fragrance ingredient restriction - Note box

The Standard is set due to the phototoxic effects of Citrus oils and other furocoumarins containing essential oils. For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the Guidance for the use of IFRA Standards.

Where the Bergapten (5-Methoxypsoralen, (5-MOP)) content of all relevant oils present in a compound has been determined, it is recommended that for applications on areas of skin exposed to UV-light, the total level of Bergapten in the consumer products should not exceed 0.0015% (15 ppm). This upper concentration level only applies to applications on skin exposed to UV-light, excluding rinse-off products and incidental skin contact products as detailed in the Guidance for the use of IFRA Standards.

Where the level of Bergapten has not been determined by appropriate methods, the limits specified in the guidelines on individual oils should apply. In those cases, where such oils are used in combination with other furocoumarin-containing phototoxic fragrance ingredients (extracts), the additive effect has to be taken into consideration and the concentration levels have to be reduced accordingly.

The sum of the concentrations of all furocoumarin-containing phototoxic fragrance ingredients (extracts), expressed in % of their recommended upper concentration level in the finished consumer product, shall not exceed 100. Restrictions for furocoumarin-containing fragrance ingredients (extracts) have been recommended for:

- Angelica root oil,
- Bergamot oil expressed,
- Bitter orange oil expressed,
- Cumin oil,
- Grapefruit oil expressed,
- Lemon oil cold pressed,
- Lime oil expressed,
- Rue oil.

The following essential oils contain small amounts of phototoxic furocoumarins (typical levels are provided in brackets):

- Petitgrain Mandarin oil (50 ppm),
- Tangerine oil cold pressed (50 ppm),
- Parsley leaf oil (20 ppm).

These levels are not high enough to require special restrictions if used alone, but if used in combination with one or the other furocoumarin-containing phototoxic fragrance ingredients (extracts), attention should be paid that the total level of Bergapten in the consumer product does not exceed 15 ppm.

Citrus oils and other furocoumarins containing essential oils

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**PHOTOTOXICITY**

RIFM SUMMARIES:

These recommendations are based on the published phototoxic effects of Bergapten and the established dose-effect relationships (Young at al., J. Photochem. Photobiol. B,7, 231 (1990); Dubertret et al.ibid 7, 251 (1990), idem, ibid, 7, 362 (1990).

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Citrus oils and other furocoumarins containing essential oils and recommends the limits for the 12 different product categories, which are the acceptable use levels of Citrus oils and other furocoumarins containing essential oils in the various product categories.

REFERENCES:

The IFRA Standard on Citrus oils and other furocoumarins containing essential oils is based on at least one of the following publications:

• Young at al., J. Photochem. Photobiol. B,7, 231 (1990).

• Dubertret et al. ibid 7, 251 (1990).

Citrus oils and other furocoumarins containing essential oils

• Dubertret et al. ibid, 7, 362 (1990).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Colophony

CAS-No.:	8050-09-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	Not applicable.
Synonyms:	Colophonium Rosin		

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1992 2002

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Colophony should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Colophony

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Colophony and recommends not to use Colophony as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Colophony is based on at least one of the following publications:

• The RIFM Safety Assessment on Colophony is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Hausen. B.M. (1989), Contact Dermatitis (20), 41-50; 133-143; 295-301.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Costus root oil, absolute and concrete

CAS-No.:	8023-88-9 90106-55-1 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.	**Molecular formula:**	Not applicable.
Synonyms:	Costus root essential oil, absolute and concrete (Saussurea lappa Clarke) Oils, costus Saussurea lappa root oil Spiral flag oil		

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1974 1998 2002

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Costus root oil, absolute and concrete should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA**

Costus root oil, absolute and concrete

	STANDARDS)

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Costus root oil, absolute and concrete and recommends not to use Costus root oil, absolute and concrete as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Costus root oil, absolute and concrete is based on at least one of the following publications:

• The RIFM Safety Assessment on Costus root oil, absolute and concrete is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Opdyke D.L. (1974), Food and Cosmetics Toxicology 12, 867.

• Mitchell J.C. and Epstein W.L (1974), Archives of Dermatology, 110, 871-872.

• Foussereau, J., Muller J.C. and Benezra C. (1975), Contact Dermatitis, 1, 223-230.

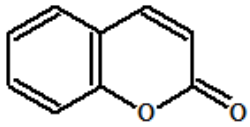
Costus root oil, absolute and concrete

• Epstein, W.L., Reynolds G.W. and Rodriguez, E. (1980), Archives of Dermatology, 116, 59-60.

• Cheminat, A., Benezra, C., Farral M.J. and Frechet, J.M.J. (1981), Canadian Journal of Chemistry, 59, 1405-1414.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Coumarin

CAS-No.:	91-64-5 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_9H_6O_2$
		Structure:	
Synonyms:	2H-1-Benzopyran-2-one 1,2-Benzopyrone cis-o-Coumaric acid lactone Coumarinic anhydride 2-Oxo-1,2-benzopyran 2H-chromen-2-one Tonka bean camphor		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2008

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.089 %	Category 7A	0.18 %
Category 2	0.080 %	Category 7B	0.18 %
Category 3	0.089 %	Category 8	0.035 %
Category 4	1.5 %	Category 9	0.52 %
Category 5A	0.38 %	Category 10A	0.52 %

Coumarin

Category 5B	0.11 %	Category 10B	1.6 %
Category 5C	0.16 %	Category 11A	0.035 %
Category 5D	0.035 %	Category 11B	0.035 %
Category 6	0.0024 %	Category 12	33 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX I**

ANNEX I

Natural Complex Substances (NCS) containing Coumarin

Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
0.03	91-64-5	Balsam oil, Peru	Myroxylon balsamum (L.) Harms var. pereirae (Royle) Harms	8007-00-9	K2.9
0.15	91-64-5	Cassia bark extract	Cinnamomum cassia Blume	8007-80-5	C2.13
2	91-64-5	Cassia oil	Cinnamomum aromaticum Nees	8007-80-5	E2.12
0.3	91-64-5	Cinnamon bark extract	Cinnamomum zeylanicum Blume	8015-91-6	C2.13
0.6	91-64-5	Cinnamon bark oil	Cinnamomum zeylanicum Blume	8015-91-6	C2.12
3	91-64-5	Cinnamon bark oil, Laos	Cinnamomum loureiroi Nees	97659-68-2	C2.12
0.3	91-64-5	Cinnamon leaf oil	Cinnamomum zeylanicum Blume	8015-91-6	E2.12
25	91-64-5	Deertongue leaf absolute	Liatris odoratissima (Walt.) Willd.	68606-82-6	E2.1
2	91-64-5	Flouve absolute	Anthoxanthum odorantum L.	68916-09-6	E2.1

Coumarin

8	91-64-5	Flouve oil	Anthoxanthum odorantum L.	68916-09-6	E2.12
8	91-64-5	Hay absolute	Lolium perenne. L	8031-00-3	E2.1
0.2	91-64-5	Lavandin abrialis oil	Lavandula x intermedia abrialis	8022-15-9	F2.12
0.1	91-64-5	Lavendin super oil	Lavendula super	93685-88-2	F2.12
5	91-64-5	Melilotus officinalis extract	Melilotus officinallis (L.) Pall.	8023-73-2	F2.13
1.2	91-64-5	Narcissus poeticus absolute	Narcissus poeticus L.	68917-12-4	F2.1
0.02	91-64-5	Osmanthus absolute	Osmanthus fragrans Lour.	68917-05-5	F2.1
0.02	91-64-5	Osmanthus concrete	Osmanthus fragrans Lour.	68917-05-5	F2.7
46.7	91-64-5	Tonka Bean absolute	Dipteryx odorata	8024-04-2	H2.1

This is a non-exhaustive indicative list of typical natural presence for Coumarin and is intended to be used in the absence of own analytical data. If analysis has shown that the level of the restricted ingredient in a natural complex substance is different from what is provided in this Annex I, then the analytically determined level should be used in place of the indicative level.
It should further be noted that natural complex substances themselves can be restricted by an IFRA Standard.
For a detailed list of natural contributions, please refer to the Annex I of IFRA Standards, publicly available on the IFRA website (www.ifrafragrance.org).

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Coumarin, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Coumarin and recommends the limits for the 12 different product categories, which are the acceptable use levels of Coumarin in the various product categories.

Coumarin

REFERENCES:

The IFRA Standard on Coumarin is based on at least one of the following publications:

• The RIFM Safety Assessment on Coumarin if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Cumin oil

CAS-No.:	8014-13-9 84775-51-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	Not applicable.
Synonyms:	Cumin seed oil Cuminum cyminum (Cumin) seed oil Cuminum cyminum L. Cuminum cyminum oil Oils, cumin (Cuminum cyminum)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1975 1986 2001 2015

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.40 %	Category 7A	No Restriction
Category 2	0.40 %	Category 7B	0.40 %
Category 3	0.40 %	Category 8	0.40 %
Category 4	0.40 %	Category 9	No Restriction
Category 5A	0.40 %	Category 10A	No Restriction

Cumin oil

Category 5B	0.40 %	Category 10B	0.40 %
Category 5C	0.40 %	Category 11A	No Restriction
Category 5D	0.40%	Category 11B	0.40 %
Category 6	0.40 %	Category 12	No Restriction

Fragrance ingredient restriction - Note box

The Standard is set due to the phototoxic effects of Cumin oil. For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the Guidance for the use of IFRA Standards.

If the level of furocoumarins is unknown, the restriction level specified in this IFRA Standard applies.

Combination effects of phototoxic ingredients are only taken into consideration for the furocoumarin-containing fragrance ingredients (extracts) listed in the IFRA Standard of Citrus oils and other furocoumarins containing essential oils.

If combinations of furocoumarin-containing phototoxic fragrance ingredients (extracts) are used, the use levels must be reduced accordingly. The sum of the concentrations of all furocoumarin-containing phototoxic fragrance ingredients (extracts), expressed in % of their recommended upper concentration level in the consumer product shall not exceed 100.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Cumin oil

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	PHOTOTOXICITY

RIFM SUMMARIES:

The NOEL for phototoxicity is 50% based on a study in 23 volunteers patched under occlusion on the back for 24 hours. Patches were removed after 10 minutes followed by irradiation with 16-20 J/cm2 of UVA. Readings were made at 1, 24, 48 & 72 hours after irradiation. No photoirritation was observed (RIFM, 1986).

Additional studies considered are:
• 100% in miniature swine, UV, distinct photoirritant effects were observed (RIFM 1972; Forbes et al., 1977)
• 100% in hairless mice, UV, distinct photoirritant effects were observed (RIFM 1972; Forbes et al., 1977).
• 100% and 25% in hairless mice, UV, no reactions at 25% 0/12, 6/12 reactions at 100% (RIFM, 1983).
• 100%, 75%, 50%, and 25% in hairless mice, UV, no reactions 0/6 at 25%, 5/6 reactions at 50%, 6/6 reactions at 75% and 100% (RIFM, 1983).
• 30% in guinea pigs, UV, no reactions 0/10 (RIFM, 1984)
• 3% and 10% in guinea pigs, UV, no reactions 0/10 at 3%, and 4/10 reactions at 10% (RIFM, 1984).

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Cumin oil and recommends the limits for the 12 different product categories, which are the acceptable use levels of Cumin oil in the various product categories.

REFERENCES:

The IFRA Standard on Cumin oil is based on at least one of the publications listed below:

• Research Institute for Fragrance Materials, Inc. (1986). Human phototoxicity study of cumin oil, tagetes minuta absolute, thyme concrete and pentyl acetate. RIFM report number 4348, 21 August.

• Research Institute for Fragrance Materials, Inc. (1985). Cumin oil: A photoirritation test in humans. Unpublished report from the Givaudan-Roure Corp. Report number 3877, 7 January.

• Research Institute for Fragrance Materials, Inc. (1972). Phototoxicity and irritation tests of fragrance materials in the hairless mice and miniature swine. Report number 2035, 26 July.

• P.D.Forbes, F.Urbach and R.E.Davies. (1977). Phototoxicity testing of fragrance raw materials. Food and Cosmetics Toxicology, 15, 55-60. Report number 1422.

Cumin oil

• K.H.Kaidbey and A.M.Kligman (1978). Identification of topical photosensitizing agents in humans. Journal of Investigative Dermatology, 70(3), 149-151. Report number 3090.

• Research Institute for Fragrance Materials, Inc. (1983). Phototoxicity study of fragrance materials in hairless mice. RIFM report number 2043, 31 January.

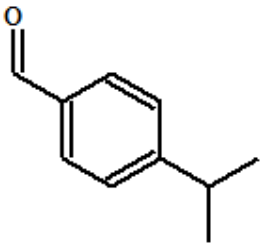
• Research Institute for Fragrance Materials, Inc. (1984). Determination of phototoxicity of cumin oil in guinea pigs. Unpublished report from the Givaudan-Roure Corp. Report number 3875, 23 February.

• Research Institute for Fragrance Materials, Inc. (1984). Determination of phototoxicity of cumin oil in guinea pigs. Unpublished report from the Givaudan-Roure Corp. Report number 3876, 17 July.

• IFRA Standard on Citrus oils and other furocoumarins containing essential oils.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Cuminaldehyde

CAS-No.:	122-03-2 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{10}H_{12}O$
		Structure:	
Synonyms:	Benzaldehyde, 4-(1-methylethyl)- Cumaldehyde Cuminal Cuminic aldehyde 4-Isopropylbenzaldehyde p-Isopropylbenzaldehyde 4-Isopropylbenzenecarboxaldehyde		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2013

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.085 %	Category 7A	0.96 %
Category 2	0.025 %	Category 7B	0.96 %
Category 3	0.51 %	Category 8	0.050 %
Category 4	0.47 %	Category 9	0.92 %

Cuminaldehyde

Category 5A	0.12 %	Category 10A	3.3 %
Category 5B	0.12 %	Category 10B	3.3 %
Category 5C	0.12 %	Category 11A	1.8 %
Category 5D	0.12 %	Category 11B	1.8 %
Category 6	0.28 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX I**

ANNEX I

Natural Complex Substances (NCS) containing Cuminaldehyde

Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
0.1	122-03-2	Cubeb oil	Piper cubeba L. f.	8007-87-2	G2.12
21	122-03-2	Cumin seed oil	Cuminum cyminum L.	8014-13-9	H2.12

This is a non-exhaustive indicative list of typical natural presence for Cuminaldehyde and is intended to be used in the absence of own analytical data. If analysis has shown that the level of the restricted ingredient in a natural complex substance is different from what is provided in this Annex I, then the analytically determined level should be used in place of the indicative level.
It should further be noted that natural complex substances themselves can be restricted by an IFRA Standard.
For a detailed list of natural contributions, please refer to the Annex I of IFRA Standards, publicly available on the IFRA website (www.ifrafragrance.org).

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Cuminaldehyde

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Cuminaldehyde, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Cuminaldehyde and recommends the limits for the 12 different product categories, which are the acceptable use levels of Cuminaldehyde in the various product categories.

REFERENCES:

The IFRA Standard on Cuminaldehyde is based on at least one of the following publications:

• The RIFM Safety Assessment on Cuminaldehyde if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

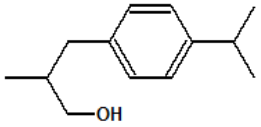
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Cyclamen alcohol

CAS-No.:	4756-19-8 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{13}H_{18}O$
		Structure:	
Synonyms:	3-(4-Isopropylphenyl)-2-methylpropan-1-ol 3-(p-Isopropyl)phenyl-2-methyl-1-propanol Benzenepropanol, .β.-methyl-4-(1-methylethyl)-		

History:	Publication date:	1980 (Amendment 4)	Previous Publications:	1977 1978

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION / SPECIFICATION**

FRAGRANCE INGREDIENT PROHIBITION:	Cyclamen alcohol should not be used as a fragrance ingredient.

FRAGRANCE INGREDIENT SPECIFICATION:	Cyclamen alcohol should not be used as a fragrance ingredient as such, but a level of up to 1.5% in Cyclamen aldehyde (CAS number 103-95-7) is accepted.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE**

Cyclamen alcohol

	SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Cyclamen alcohol and recommends not to use Cyclamen alcohol as or in fragrance ingredients in any finished product application other than described in the above fragrance ingredient specification.

REFERENCES:

The IFRA Standard on Cyclamen alcohol is based on at least one of the following publications:

• The RIFM Safety Assessment on Cyclamen alcohol is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

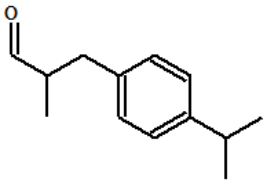
• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• D.L.J. Opdyke (1979), Fd. Cosmet. Toxicol. 17, 267.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Cyclamen aldehyde

CAS-No.:	103-95-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{13}H_{18}O$
		Structure:	
Synonyms:	Benzenepropanal, α-methyl-4-(1-methylethyl)- Benzenepropanol, .α.-methyl-4-(1-methylethyl)- 3-p-Cumenyl-2-methylpropionaldehyde p-Isopropyl-α-methylhydrocinnamaldehyde 3-(4-Isopropylphenyl)-2-methylpropanal 2-Methyl-3-(p-isopropylphenyl)propionaldehyde α-Methyl-p-isopropylphenylpropylaldehyde α-Methyl-4-(1-methylethyl)benzenepropanal Cyclamal (commercial name) Cyclaviol (commercial name) Cyclosal (commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2013 2015

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION / SPECIFICATION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.11 %	Category 7A	0.076 %
Category 2	0.14 %	Category 7B	0.076 %
Category 3	0.038 %	Category 8	0.025 %

Cyclamen aldehyde

Category 4	0.95 %	Category 9	0.23 %
Category 5A	0.45 %	Category 10A	0.23 %
Category 5B	0.076 %	Category 10B	0.72 %
Category 5C	0.076 %	Category 11A	0.025 %
Category 5D	0.025 %	Category 11B	0.025 %
Category 6	0.076 %	Category 12	16 %

FRAGRANCE INGREDIENT SPECIFICATION:	Cyclamen aldehyde should not contain more than 1.5% of Cyclamen alcohol.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Cyclamen aldehyde has been found in natural extracts but only at trace levels.

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Cyclamen aldehyde

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Cyclamen aldehyde, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Cyclamen aldehyde and recommends the limits for the 12 different product categories, which are the acceptable use levels of Cyclamen aldehyde in the various product categories.
In addition, they recommend to use Cyclamen aldehyde according to the specification above mentioned.

REFERENCES:

The IFRA Standard on Cyclamen aldehyde is based on at least one of the following publications:

• The RIFM Safety Assessment on Cyclamen aldehyde if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

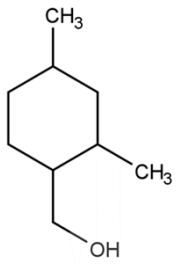
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Cyclohexanemethanol, 2,4-dimethyl-

CAS-No.:	68480-15-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_9H_{18}O$
		Structure:	
Synonyms:	(2,4-Dimethylcyclohexyl)methanol 2,4-Dimethylcyclohexanemethanol		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.0013 %	Category 7A	0.0013 %
Category 2	0.39 %	Category 7B	0.0013 %
Category 3	0.0013 %	Category 8	0.00043 %
Category 4	0.0013 %	Category 9	3.1 %
Category 5A	1.3 %	Category 10A	3.1 %
Category 5B	0.0013 %	Category 10B	0.0013 %

Cyclohexanemethanol, 2,4-dimethyl-

Category 5C	0.0013 %	Category 11A	0.00043 %
Category 5D	0.00043 %	Category 11B	0.00043 %
Category 6	0.0013 %	Category 12	0.0013 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Cyclohexanemethanol, 2,4-dimethyl-, which can be downloaded from the RIFM Safety Assessment Sheet Database:

Cyclohexanemethanol, 2,4-dimethyl-

http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Cyclohexanemethanol, 2,4-dimethyl- and recommends the limits for the 12 different product categories, which are the acceptable use levels of Cyclohexanemethanol, 2,4-dimethyl- in the various product categories.

REFERENCES:

The IFRA Standard on Cyclohexanemethanol, 2,4-dimethyl- is based on at least one of the following publications:

• The RIFM Safety Assessment on Cyclohexanemethanol, 2,4-dimethyl- if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

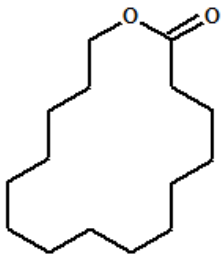
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Cyclopentadecanolide

CAS-No.:	106-02-5 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{15}H_{28}O_2$
		Structure:	
Synonyms:	Angelica lactone Cyclopentadecanolide 15-Hydroxypentadecanoic acid, ω-lactone Oxacyclohexadecan-2-one Pentadecalactone ω-Pentadecalactone Pentadecanolide Cyclopentadecanolid Supra (commercial name) Exaltex (commercial name) Exaltolide (commercial name) Macrolide (commercial name) Muskalactone (commercial name) Pentalide (commercial name) Thibetolide (commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2013

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.42 %	Category 7A	4.8 %

Cyclopentadecanolide

Category 2	0.13 %	Category 7B	4.8 %
Category 3	2.5 %	Category 8	0.20 %
Category 4	2.4 %	Category 9	4.6 %
Category 5A	0.60 %	Category 10A	4.6 %
Category 5B	0.60 %	Category 10B	17 %
Category 5C	0.60 %	Category 11A	0.20 %
Category 5D	0.20 %	Category 11B	0.20 %
Category 6	1.4 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX I**

ANNEX I

Natural Complex Substances (NCS) containing Cyclopentadecanolide

Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
1.6	106-02-5	Angelica root oil	Angelica archangelica L.	8015-64-3	A2.12
0.29	106-02-5	Angelica seed oil	Angelica archangelica L.	8015-64-3	H2.12
0.01	106-02-5	Galbanum gum	Ferula spp.	8023-91-4	K2.15
0.1	106-02-5	Galbanum oil	Ferula spp.	8023-91-4	K2.12
0.1	106-02-5	Galbanum resin	Ferula spp.	8023-91-4	K2.13

Cyclopentadecanolide

This is a non-exhaustive indicative list of typical natural presence for Cyclopentadecanolide and is intended to be used in the absence of own analytical data. If analysis has shown that the level of the restricted ingredient in a natural complex substance is different from what is provided in this Annex I, then the analytically determined level should be used in place of the indicative level.
It should further be noted that natural complex substances themselves can be restricted by an IFRA Standard.
For a detailed list of natural contributions, please refer to the Annex I of IFRA Standards, publicly available on the IFRA website (www.ifrafragrance.org).

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Cyclopentadecanolide, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Cyclopentadecanolide and recommends the limits for the 12 different product categories, which are the acceptable use levels of Cyclopentadecanolide in the various product categories.

REFERENCES:

The IFRA Standard on Cyclopentadecanolide is based on at least one of the following publications:

• The RIFM Safety Assessment on Cyclopentadecanolide if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

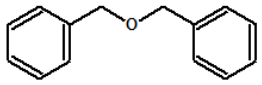
Cyclopentadecanolide

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Dibenzyl ether

CAS-No.:	103-50-4 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{14}H_{14}O$
		Structure:	
Synonyms:	Phenylmethoxymethylbenzene Benzene, 1,1'-[oxybis(methylene)]bis- Benzyl ether Benzyl oxide Dibenzyl oxide 1,1'-[Oxybis(methylene)]dibenzene		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2009

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.000040 %	Category 7A	0.00093 %
Category 2	0.0028 %	Category 7B	0.00093 %
Category 3	0.00020 %	Category 8	0.000081 %
Category 4	0.012 %	Category 9	0.0037 %
Category 5A	0.0023 %	Category 10A	0.0037 %

Dibenzyl ether

Category 5B	0.00024 %	Category 10B	0.0037 %
Category 5C	0.00032 %	Category 11A	0.000081 %
Category 5D	0.000081 %	Category 11B	0.000081 %
Category 6	0.0023 %	Category 12	0.24 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Dibenzyl ether

Additional information is available in the RIFM safety assessment for Dibenzyl ether, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Dibenzyl ether and recommends the limits for the 12 different product categories, which are the acceptable use levels of Dibenzyl ether in the various product categories.

REFERENCES:

The IFRA Standard on Dibenzyl ether is based on at least one of the following publications:

• The RIFM Safety Assessment on Dibenzyl ether if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

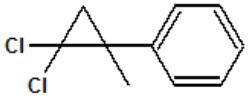
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

2,2-Dichloro-1-methylcyclopropylbenzene

CAS-No.:	3591-42-2 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{10}H_{10}Cl_2$
		Structure:	
Synonyms:	Benzene, (2,2-dichloro-1-methylcyclopropyl)-		

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	2,2-Dichloro-1-methylcyclopropylbenzene should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

2,2-Dichloro-1-methylcyclopropylbenzene

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	INSUFFICIENT DATA

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 2,2-Dichloro-1-methylcyclopropylbenzene and recommends not to use 2,2-Dichloro-1-methylcyclopropylbenzene as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:

The IFRA Standard on 2,2-Dichloro-1-methylcyclopropylbenzene is based on at least one of the following publications:

• The RIFM Safety Assessment on 2,2-Dichloro-1-methylcyclopropylbenzene if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

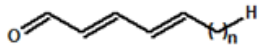
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

2,4-Dienals

CAS-No.:	764-40-9 142-83-6 80466-34-8 5910-85-0 30361-28-5 6750-03-4 2363-88-4 13162-46-4 21662-16-8 25152-84-5 30361-29-6 4313-03-5 20432-40-0 4488-48-6 5577-44-6 5910-87-2 The scope of the Standard covers but is not limited to the list of CAS numbers enumerated above (including all their geometric isomers).	**Molecular formula:**	$C_5+nH_6+_2nO$
		Structure:	
Synonyms:	Including but not limited to: 2,4-Pentadienal 2,4-Hexadienal 2,4-Heptadienal 2,4-Octadienal 2,4-Nonadienal 2,4-Decadienal 2,4-Undecadienal 2,4-Dodecadienal trans,trans-2,4-Decadienal trans,trans-2,4-Undecadienal 2,4-Heptadien-1-al (including all geometric isomers)		

History:	Publication date:	2013 (Amendment 47)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	August 10, 2013
	For existing fragrance compounds*:	August 10, 2014
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace. This IFRA Standard represents the group of 2-4-Dienals and replaces the existing individual IFRA Standards for the materials listed above. This new group also includes any other 2,4-Dienals.	

2,4-Dienals

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	2,4-Dienals should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

2,4-Decadienal (CAS number 2363-88-4) has been found in natural extracts but only at trace levels.

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**INSUFFICIENT DATA**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 2,4-Dienals and recommends not to use 2,4-Dienals as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:

The IFRA Standard on 2,4-Dienals is based on at least one of the following publications:

• The RIFM Safety Assessment on 2,4-Dienals if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety

2,4-Dienals

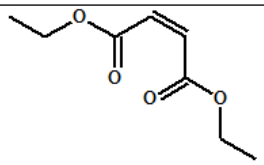
evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Diethyl maleate

CAS-No.:	141-05-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_8H_{12}O_4$
		Structure:	
Synonyms:	2-Butenedioic acid (2Z)-, diethyl ester Ethyl maleate Maleic acid, diethyl ester		

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1975 2002

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Diethyl maleate should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Diethyl maleate

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Diethyl maleate and recommends not to use Diethyl maleate as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Diethyl maleate is based on at least one of the following publications:

• The RIFM Safety Assessment on Diethyl maleate is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

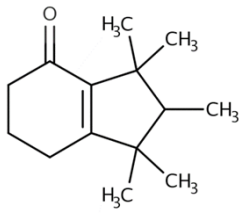
• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Opdyke, D.L.J. (1976), Food and Cosmetics Toxicology 14, 443.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

6,7-Dihydro-1,1,2,3,3-pentamethyl-4(5H)-indanone (DPMI)

CAS-No.:	33704-61-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{14}H_{22}O$
		Structure:	
Synonyms:	1,2,3,5,6,7-Hexahydro-1,1,2,3,3-pentamethyl-4H-inden-4-one 4H-Inden-4-one, 1,2,3,5,6,7-hexahydro-1,1,2,3,3-pentamethyl- 1,1,2,3,3-Pentamethyl-1,2,3,5,6,7-hexahydro-4H-inden-4-one Cashmeran (commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2015

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.0063 %	Category 7A	0.031 %
Category 2	0.26 %	Category 7B	0.031 %
Category 3	0.019 %	Category 8	0.0084 %
Category 4	3.8 %	Category 9	0.13 %
Category 5A	0.31 %	Category 10A	0.13 %

6,7-Dihydro-1,1,2,3,3-pentamethyl-4(5H)-indanone (DPMI)

Category 5B	0.025 %	Category 10B	0.28 %
Category 5C	0.038 %	Category 11A	0.0084 %
Category 5D	0.0084 %	Category 11B	0.0084 %
Category 6	0.0063 %	Category 12	9.4 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

6,7-Dihydro-1,1,2,3,3-pentamethyl-4(5H)-indanone (DPMI)

Additional information is available in the RIFM safety assessment for 6,7-Dihydro-1,1,2,3,3-pentamethyl-4(5H)-indanone (DPMI), which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 6,7-Dihydro-1,1,2,3,3-pentamethyl-4(5H)-indanone (DPMI) and recommends the limits for the 12 different product categories, which are the acceptable use levels of 6,7-Dihydro-1,1,2,3,3-pentamethyl-4(5H)-indanone (DPMI) in the various product categories.

REFERENCES:

The IFRA Standard on 6,7-Dihydro-1,1,2,3,3-pentamethyl-4(5H)-indanone (DPMI) is based on at least one of the following publications:

• The RIFM Safety Assessment on 6,7-Dihydro-1,1,2,3,3-pentamethyl-4(5H)-indanone (DPMI) if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

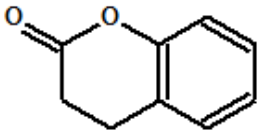
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Dihydrocoumarin

CAS-No.:	119-84-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_9H_8O_2$
		Structure:	
Synonyms:	1,2-Benzodihydropyrone 2H-1-Benzopyran-2-one, 3,4-dihydro- Chroman-2-one 2-Chromanone 3,4-Dihydro-2H-1-benzopyran-2-one o-Hydroxydihydrocinnamic acid lactone Melilotic acid lactone		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1974 2013

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.077 %	Category 7A	0.88 %
Category 2	0.023 %	Category 7B	0.88 %
Category 3	0.46 %	Category 8	0.030 %
Category 4	0.43 %	Category 9	0.84 %
Category 5A	0.11 %	Category 10A	0.84 %

Dihydrocoumarin

Category 5B	0.11 %	Category 10B	3.0 %
Category 5C	0.11 %	Category 11A	0.030 %
Category 5D	0.030 %	Category 11B	0.030 %
Category 6	0.25 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX I**

ANNEX I

Natural Complex Substances (NCS) containing Dihydrocoumarin

Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
2	119-84-6	Deertongue leaf absolute	Liatris odoratissima (Walt.) Willd.	68606-82-6	E2.1
0.05	119-84-6	Tonka Bean absolute	Dipteryx odorata	8024-04-2	H2.1

This is a non-exhaustive indicative list of typical natural presence for Dihydrocoumarin and is intended to be used in the absence of own analytical data. If analysis has shown that the level of the restricted ingredient in a natural complex substance is different from what is provided in this Annex I, then the analytically determined level should be used in place of the indicative level.
It should further be noted that natural complex substances themselves can be restricted by an IFRA Standard.
For a detailed list of natural contributions, please refer to the Annex I of IFRA Standards, publicly available on the IFRA website (www.ifrafragrance.org).

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Dihydrocoumarin

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Dihydrocoumarin, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Dihydrocoumarin and recommends the limits for the 12 different product categories, which are the acceptable use levels of Dihydrocoumarin in the various product categories.

REFERENCES:

The IFRA Standard on Dihydrocoumarin is based on at least one of the following publications:

• The RIFM Safety Assessment on Dihydrocoumarin if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

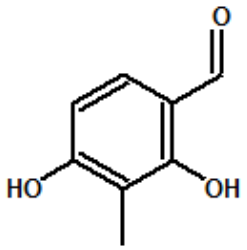
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

2,4-Dihydroxy-3-methylbenzaldehyde

CAS-No.:	6248-20-0 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_8H_8O_3$
		Structure:	
Synonyms:	Benzaldehyde, 2,4-dihydroxy-3-methyl- 4-Formyl-2-methylresorcinol		

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1980 1989 2002

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	2,4-Dihydroxy-3-methylbenzaldehyde should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

2,4-Dihydroxy-3-methylbenzaldehyde

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 2,4-Dihydroxy-3-methylbenzaldehyde and recommends not to use 2,4-Dihydroxy-3-methylbenzaldehyde as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on 2,4-Dihydroxy-3-methylbenzaldehyde is based on at least one of the following publications:

• The RIFM Safety Assessment on 2,4-Dihydroxy-3-methylbenzaldehyde is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

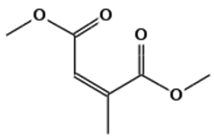
• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Ford, R.A. (1988), Food and Chemical Toxicology 26, 303.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Dimethyl citraconate

CAS-No.:	617-54-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_7H_{10}O_4$
		Structure:	
Synonyms:	2-Butenedioic acid, 2-methyl-, dimethyl ester, (2Z)- Dimethyl methyl maleate Methylmaleic acid, dimethyl ester		

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1976 2002

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Dimethyl citraconate should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Dimethyl citraconate

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Dimethyl citraconate and recommends not to use Dimethyl citraconate as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Dimethyl citraconate is based on at least one of the following publications:

• The RIFM Safety Assessment on Dimethyl citraconate is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

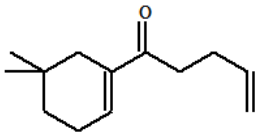
• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Opdyke, D.L.J. (1976), Food and Cosmetics Toxicology 14, 749.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

1-(5,5-Dimethyl-1-cyclohexen-1-yl)pent-4-en-1-one

CAS-No.:	56973-85-4 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{13}H_{20}O$
		Structure:	
Synonyms:	α-Dynascone 4-Penten-1-one, 1-(5,5-dimethyl-1-cyclohexen-1-yl)- Dynascone (commercial name) Galbanone (commercial name) Galbascone (commercial name) Neobutenone (commercial name) Neogal (commercial name) Neogalbenum (commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2009

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.19 %	Category 7A	0.54 %
Category 2	0.057 %	Category 7B	0.54 %
Category 3	0.18 %	Category 8	0.091 %
Category 4	1.1 %	Category 9	1.4 %

1-(5,5-Dimethyl-1-cyclohexen-1-yl)pent-4-en-1-one

Category 5A	0.27 %	Category 10A	1.4 %
Category 5B	0.27 %	Category 10B	3.4 %
Category 5C	0.27 %	Category 11A	0.091 %
Category 5D	0.091 %	Category 11B	0.091 %
Category 6	0.54 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to

1-(5,5-Dimethyl-1-cyclohexen-1-yl)pent-4-en-1-one

the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 1-(5,5-Dimethyl-1-cyclohexen-1-yl)pent-4-en-1-one, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 1-(5,5-Dimethyl-1-cyclohexen-1-yl)pent-4-en-1-one and recommends the limits for the 12 different product categories, which are the acceptable use levels of 1-(5,5-Dimethyl-1-cyclohexen-1-yl)pent-4-en-1-one in the various product categories.

REFERENCES:

The IFRA Standard on 1-(5,5-Dimethyl-1-cyclohexen-1-yl)pent-4-en-1-one is based on at least one of the following publications:

• The RIFM Safety Assessment on 1-(5,5-Dimethyl-1-cyclohexen-1-yl)pent-4-en-1-one if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

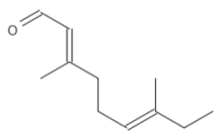
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

3,7-Dimethyl-2,6-nonadien-1-al

CAS-No.:	41448-29-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{11}H_{18}O$
		Structure:	
Synonyms:	2,6-Nonadien-1-al, 3,7-dimethyl- 3,7-Dimethylnona-2,6-dienal Ethyl citral		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.11 %	Category 7A	1.2 %
Category 2	0.032 %	Category 7B	1.2 %
Category 3	0.65 %	Category 8	0.051 %
Category 4	0.60 %	Category 9	0.16 %
Category 5A	0.15 %	Category 10A	0.16 %
Category 5B	0.15 %	Category 10B	4.2 %

3,7-Dimethyl-2,6-nonadien-1-al

Category 5C	0.15 %	Category 11A	0.051 %
Category 5D	0.051 %	Category 11B	0.051 %
Category 6	0.16 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 3,7-Dimethyl-2,6-nonadien-1-al, which can be downloaded from the RIFM Safety Assessment Sheet Database:

3,7-Dimethyl-2,6-nonadien-1-al

http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 3,7-Dimethyl-2,6-nonadien-1-al and recommends the limits for the 12 different product categories, which are the acceptable use levels of 3,7-Dimethyl-2,6-nonadien-1-al in the various product categories.

REFERENCES:

The IFRA Standard on 3,7-Dimethyl-2,6-nonadien-1-al is based on at least one of the following publications:

• The RIFM Safety Assessment on 3,7-Dimethyl-2,6-nonadien-1-al if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

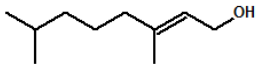
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

3,7-Dimethyl-2-octen-1-ol

CAS-No.:	40607-48-5 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{10}H_{20}O$
		Structure:	
Synonyms:	6,7-Dihydrogeraniol 2-Octen-1-ol, 3,7-dimethyl		

History:	Publication date:	2004 (Amendment 38)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	3,7-Dimethyl-2-octen-1-ol should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

3,7-Dimethyl-2-octen-1-ol

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 3,7-Dimethyl-2-octen-1-ol and recommends not to use 3,7-Dimethyl-2-octen-1-ol as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on 3,7-Dimethyl-2-octen-1-ol is based on at least one of the following publications:

• The RIFM Safety Assessment on 3,7-Dimethyl-2-octen-1-ol is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

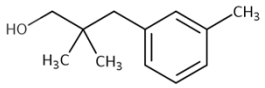
• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Ford et al., 1992, Food and Chemical Toxicology, Volume 30, Supplement, Special Issue VIII, page 19S.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

2,2-Dimethyl-3-(3-tolyl)propan-1-ol

CAS-No.:	103694-68-4 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{12}H_{18}O$
		Structure:	
Synonyms:	Benzenepropanol,.ß.,. ß.,3-trimethyl 2,2-Dimethyl-3-(3-methylphenyl)propanol Benzene propanol Majantol (commercial name) Linlan alcohol (commercial name) Muguetol B (commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2008 2010

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION / SPECIFICATION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.034 %	Category 7A	0.052 %
Category 2	0.20 %	Category 7B	0.052 %
Category 3	0.025 %	Category 8	0.013 %
Category 4	1.7 %	Category 9	0.14 %
Category 5A	0.43 %	Category 10A	0.14 %

2,2-Dimethyl-3-(3-tolyl)propan-1-ol

Category 5B	0.061 %	Category 10B	0.30 %
Category 5C	0.039 %	Category 11A	0.013 %
Category 5D	0.013 %	Category 11B	0.013 %
Category 6	0.0025 %	Category 12	8.6 %

FRAGRANCE INGREDIENT SPECIFICATION:	2,2-Dimethyl-3-(3-tolyl)propan-1-ol should only be used as a fragrance ingredient if traces of organochlorine compounds are restricted. Total Chlorine, which can be measured by Atomic Absorption Spectroscopy, must not exceed 25 ppm in the raw material.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

2,2-Dimethyl-3-(3-tolyl)propan-1-ol

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 2,2-Dimethyl-3-(3-tolyl)propan-1-ol, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 2,2-Dimethyl-3-(3-tolyl)propan-1-ol and recommends the limits for the 12 different product categories, which are the acceptable use levels of 2,2-Dimethyl-3-(3-tolyl)propan-1-ol in the various product categories.
In addition, they recommend to use 2,2-Dimethyl-3-(3-tolyl)propan-1-ol according to the specification above mentioned.

REFERENCES:

The IFRA Standard on 2,2-Dimethyl-3-(3-tolyl)propan-1-ol is based on at least one of the following publications:

• The RIFM Safety Assessment on 2,2-Dimethyl-3-(3-tolyl)propan-1-ol if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

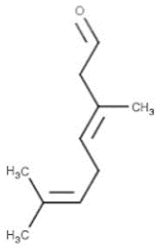
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

3,7-Dimethyl-3,6-octadienal

CAS-No.:	55722-59-3 1754-00-3 72203-98-6 72203-97-5 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{10}H_{16}O$
		Structure:	
Synonyms:	3,6-Octadienal, 3,7-dimethyl- 3,7-Dimethylocta-3,6-dienal (E)-3,7-Dimethyl-3,6-octadienal (Z)-3,7-Dimethyl-3,6-octadienal Isocitral (Commercial name) Isogeranial (Commercial name) Isoneral (Commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.54 %	Category 7A	0.12 %
Category 2	0.16 %	Category 7B	0.12 %
Category 3	0.030 %	Category 8	0.010 %

3,7-Dimethyl-3,6-octadienal

Category 4	3.0 %	Category 9	0.79 %
Category 5A	0.76 %	Category 10A	0.79 %
Category 5B	0.12 %	Category 10B	4.2 %
Category 5C	0.030 %	Category 11A	0.010 %
Category 5D	0.010 %	Category 11B	0.010 %
Category 6	1.3 %	Category 12	53 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX I**

ANNEX I

Natural Complex Substances (NCS) containing 3,7-Dimethyl-3,6-octadienal

Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
1	72203-98-6	Balm oil	Melissa officinalis L.	8014-71-9	E2.12
0.3	72203-97-5	Balm oil	Melissa officinalis L.	8014-71-9	E2.12
1	72203-98-6	Lemongrass oil, East Indian	Cymbopogon flexuosus (Nees ex Steudel) Will. Watson	8007-02-1	E2.12
0.8	72203-97-5	Lemongrass oil, East Indian	Cymbopogon flexuosus (Nees ex Steudel) Will. Watson	8007-02-1	E2.12
1.2	72203-98-6	Lemongrass oil, West Indian	Cymbopogon citratus (DC) Stapf.	8007-02-1	E2.12
1	72203-97-5	Lemongrass oil, West Indian	Cymbopogon citratus (DC) Stapf.	8007-02-1	E2.12

3,7-Dimethyl-3,6-octadienal

1	72203-98-6	Litsea cubeba oil	Litsea Cubeba(Lour.) Pers.	68855-99-2	G2.12
0.4	72203-97-5	Litsea cubeba oil	Litsea Cubeba(Lour.) Pers.	68855-99-2	G2.12
0.5	72203-98-6	Petitgrain lemon oil	Citrus limon (L.) Burm. f.	8048-51-9	E2.12
0.2	72203-97-5	Petitgrain lemon oil	Citrus limon (L.) Burm. f.	8048-51-9	E2.12
1.3	1754-00-3; 55722-59-3	Balm oil	Melissa officinalis L.	8014-71-9	E2.12
1.8	1754-00-3; 55722-59-3	Lemongrass oil, East Indian	Cymbopogon flexuosus (Nees ex Steudel) Will. Watson	8007-02-1	E2.12
2.2	1754-00-3; 55722-59-3	Lemongrass oil, West Indian	Cymbopogon citratus (DC) Stapf.	8007-02-1	E2.12
1.4	1754-00-3; 55722-59-3	Litsea cubeba oil	Litsea Cubeba(Lour.) Pers.	68855-99-2	G2.12
0.7	1754-00-3; 55722-59-3	Petitgrain lemon oil	Citrus limon (L.) Burm. f.	8048-51-9	E2.12

The natural contribution of 3,7-Dimethyl-3,6-octadienal is determined by the sum of the natural contributions of each of its isomers.

This is a non-exhaustive indicative list of typical natural presence for 3,7-Dimethyl-3,6-octadienal and is intended to be used in the absence of own analytical data. If analysis has shown that the level of the restricted ingredient in a natural complex substance is different from what is provided in this Annex I, then the analytically determined level should be used in place of the indicative level.

It should further be noted that natural complex substances themselves can be restricted by an IFRA Standard.

For a detailed list of natural contributions, please refer to the Annex I of IFRA Standards, publicly available on the IFRA website (www.ifrafragrance.org).

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 3,7-Dimethyl-3,6-octadienal, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

3,7-Dimethyl-3,6-octadienal

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 3,7-Dimethyl-3,6-octadienal and recommends the limits for the 12 different product categories, which are the acceptable use levels of 3,7-Dimethyl-3,6-octadienal in the various product categories.

REFERENCES:

The IFRA Standard on 3,7-Dimethyl-3,6-octadienal is based on at least one of the following publications:

• The RIFM Safety Assessment on 3,7-Dimethyl-3,6-octadienal if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

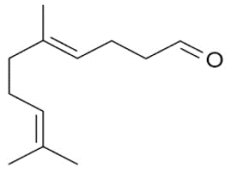
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

5,9-Dimethyl-4,8-decadienal

CAS-No.:	762-26-5 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{12}H_{20}O$
		Structure:	
Synonyms:	4,8-Decadienal, 5,9-dimethyl- 5,9-Dimethyldeca-4,8-dienal Geraldehyde (Commercial name) Geranyl Acetaldehyde (Commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.074 %	Category 7A	1.1 %
Category 2	0.16 %	Category 7B	1.1 %
Category 3	0.074 %	Category 8	0.025 %
Category 4	3.0 %	Category 9	2.5 %
Category 5A	0.76 %	Category 10A	2.5 %
Category 5B	0.15 %	Category 10B	4.6 %

5,9-Dimethyl-4,8-decadienal

Category 5C	0.074 %	Category 11A	0.025 %
Category 5D	0.025 %	Category 11B	0.025 %
Category 6	0.074 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 5,9-Dimethyl-4,8-decadienal, which can be downloaded from the RIFM Safety Assessment Sheet Database:

5,9-Dimethyl-4,8-decadienal

http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 5,9-Dimethyl-4,8-decadienal and recommends the limits for the 12 different product categories, which are the acceptable use levels of 5,9-Dimethyl-4,8-decadienal in the various product categories.

REFERENCES:

The IFRA Standard on 5,9-Dimethyl-4,8-decadienal is based on at least one of the following publications:

• The RIFM Safety Assessment on 5,9-Dimethyl-4,8-decadienal if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

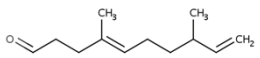
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

4,8-Dimethyl-4,9-decadienal

CAS-No.:	71077-31-1 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{12}H_{20}O$
		Structure:	
Synonyms:	4,9-Decadienal, 4,8-dimethyl- Aldehyde DMD (Commercial name) Floral Super (Commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.042 %	Category 7A	0.48 %
Category 2	0.013 %	Category 7B	0.48 %
Category 3	0.25 %	Category 8	0.020 %
Category 4	0.24 %	Category 9	0.46 %
Category 5A	0.060 %	Category 10A	0.46 %
Category 5B	0.060 %	Category 10B	1.7 %

4,8-Dimethyl-4,9-decadienal

Category 5C	0.060 %	Category 11A	0.020 %
Category 5D	0.020 %	Category 11B	0.020 %
Category 6	0.14 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 4,8-Dimethyl-4,9-decadienal, which can be downloaded from the RIFM Safety Assessment Sheet Database:

4,8-Dimethyl-4,9-decadienal

http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 4,8-Dimethyl-4,9-decadienal and recommends the limits for the 12 different product categories, which are the acceptable use levels of 4,8-Dimethyl-4,9-decadienal in the various product categories.

REFERENCES:

The IFRA Standard on 4,8-Dimethyl-4,9-decadienal is based on at least one of the following publications:

• The RIFM Safety Assessment on 4,8-Dimethyl-4,9-decadienal if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

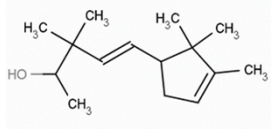
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

3,3-Dimethyl-5-(2,2,3-trimethyl-3-cyclopenten-1-yl)-4-penten-2-ol

CAS-No.:	107898-54-4 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{15}H_{26}O$
		Structure:	
Synonyms:	4-Penten-2-ol, 3,3-dimethyl-5-(2,2,3-trimethyl-3-cyclopenten-1-yl)- (+/-) trans-3,3-Dimethyl-5-(2,2,3-trimethyl-cyclopent-3-en-1-yl)pent-4-en-2-ol Mysantol (Commercial name) Polysantol (Commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.031 %	Category 7A	0.63 %
Category 2	0.057 %	Category 7B	0.63 %
Category 3	0.25 %	Category 8	0.091 %
Category 4	1.1 %	Category 9	1.7 %
Category 5A	0.27 %	Category 10A	1.7 %
Category 5B	0.27 %	Category 10B	4.0 %

3,3-Dimethyl-5-(2,2,3-trimethyl-3-cyclopenten-1-yl)-4-penten-2-ol

Category 5C	0.27 %	Category 11A	0.091 %
Category 5D	0.091 %	Category 11B	0.091 %
Category 6	0.031 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 3,3-Dimethyl-5-(2,2,3-trimethyl-3-cyclopenten-1-yl)-4-penten-2-ol, which can be downloaded from the RIFM Safety

3,3-Dimethyl-5-(2,2,3-trimethyl-3-cyclopenten-1-yl)-4-penten-2-ol

Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 3,3-Dimethyl-5-(2,2,3-trimethyl-3-cyclopenten-1-yl)-4-penten-2-ol and recommends the limits for the 12 different product categories, which are the acceptable use levels of 3,3-Dimethyl-5-(2,2,3-trimethyl-3-cyclopenten-1-yl)-4-penten-2-ol in the various product categories.

REFERENCES:

The IFRA Standard on 3,3-Dimethyl-5-(2,2,3-trimethyl-3-cyclopenten-1-yl)-4-penten-2-ol is based on at least one of the following publications:

• The RIFM Safety Assessment on 3,3-Dimethyl-5-(2,2,3-trimethyl-3-cyclopenten-1-yl)-4-penten-2-ol if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

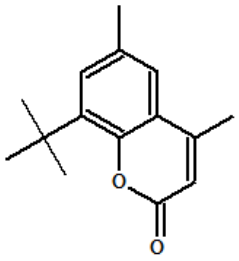
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

4,6-Dimethyl-8-tert-butylcoumarin

CAS-No.:	17874-34-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{15}H_{18}O_2$
		Structure:	
Synonyms:	2H-1-Benzopyran-2-one, 8-(1,1-dimethylethyl)-4,6-dimethyl- Butolia		

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1979 1981 2002

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	4,6-Dimethyl-8-tert-butylcoumarin should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

4,6-Dimethyl-8-tert-butylcoumarin

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	PHOTOSENSITIZATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 4,6-Dimethyl-8-tert-butylcoumarin and recommends not to use 4,6-Dimethyl-8-tert-butylcoumarin as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on 4,6-Dimethyl-8-tert-butylcoumarin is based on at least one of the following publications:

• The RIFM Safety Assessment on 4,6-Dimethyl-8-tert-butylcoumarin is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Opdyke, D.L.J. (1980), Food and Cosmetics Toxicology 18, 671.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Dimethylcyclohex-3-ene-1-carbaldehyde (mixed isomers)

CAS-No.:	68737-61-1 (mixed isomers) 68039-49-6 68039-48-5 27939-60-2 67801-65-4 36635-35-5 68084-52-6 35145-02-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.	**Molecular formula:**	$C_9H_{14}O$
Synonyms:	Dimethylcyclohex-3-ene-1-carbaldehyde (isomer mixture) (68737-61-1) 2,4-Dimethyl-3-cyclohexen-1-carboxaldehyde (68039-49-6) 3,5-Dimethylcyclohex-3-ene-1-carbaldehyde (68039-48-5) Dimethylcyclohex-3-ene-1-carbaldehyde (isomer unspecified) (27939-60-2) 3,6-Dimethyl-3-cyclohexene-1-carboxaldehyde (67801-65-4) 3-Cyclohexene-1-carboxaldehyde, dimethyl- (isomer mixture) 2,4-Dimethyltetrahydrobenzaldehyde Dimethyltetrahydrobenzaldehyde (isomer mixture) Triplal (commercial name) Vertocitral (commercial name) Vertoliff (commercial name) Tricyclal (commercial name) Hivertal (commercial name) Agrumen Aldehyde (commercial name) Cyclovertal (commercial name) Ligustral (commercial name) Aldehyde AA (commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2010 2013

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

Dimethylcyclohex-3-ene-1-carbaldehyde (mixed isomers)

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.45 %	Category 7A	5.2 %
Category 2	0.14 %	Category 7B	5.2 %
Category 3	2.7 %	Category 8	0.27 %
Category 4	2.5 %	Category 9	4.9 %
Category 5A	0.64 %	Category 10A	18 %
Category 5B	0.64 %	Category 10B	18 %
Category 5C	0.64 %	Category 11A	9.8 %
Category 5D	0.64 %	Category 11B	9.8 %
Category 6	1.5 %	Category 12	No Restriction

Fragrance ingredient restriction - Note box
The above limits apply to Dimethylcyclohexen-3-ene-1-carbaldehyde (mixed isomers) used individually or in combination. The sum of concentrations of Dimethylcyclohexen-3-ene-1-carbaldehyde isomers should not exceed the maximum concentration levels established by this Standard.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX II**

Dimethylcyclohex-3-ene-1-carbaldehyde (mixed isomers)

ANNEX II				
Dimethylcyclohex-3-ene-1-carbaldehyde (mixed isomers)	CAS number (Aldehyde)	Schiff base	CAS number (Schiff base)	Level of restricted aldehyde in the Schiff base (%)
2,4-Dimethylcyclohex-3-ene-1-carbaldehyde (Triplal)	68039-49-6	Triplal-methyl anthranilate (or Vertosine, Ligantraal, Agrumea)	68738-99-8	50.9

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Dimethylcyclohex-3-ene-1-carbaldehyde (mixed isomers), which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Dimethylcyclohex-3-ene-1-carbaldehyde (mixed isomers) and recommends the limits for the 12 different product categories, which are the acceptable use levels of Dimethylcyclohex-3-ene-1-carbaldehyde (mixed isomers) in the various product categories.

REFERENCES:

The IFRA Standard on Dimethylcyclohex-3-ene-1-carbaldehyde (mixed isomers) is based on at least one of the following publications:

• The RIFM Safety Assessment on Dimethylcyclohex-3-ene-1-carbaldehyde (mixed isomers) if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

Dimethylcyclohex-3-ene-1-carbaldehyde (mixed isomers)

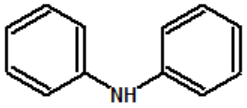
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Diphenylamine

CAS-No.:	122-39-4 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{12}H_{11}N$
		Structure:	
Synonyms:	Benzeneamine, N-phenyl-		

History:	Publication date:	2004 (Amendment 38)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Diphenylamine should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Diphenylamine

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	TOXICITY, TERATOGENICITY

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Diphenylamine and recommends not to use Diphenylamine as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Diphenylamine is based on at least one of the following publications:

• The RIFM Safety Assessment on Diphenylamine is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

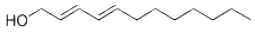
• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Opdyke, 1978, Food and Cosmetics Toxicology, Volume 16, Supplement 1, Special Issue IV, page 723-727.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

2,4-Dodecadien-1-ol, (2E, 4E)

CAS-No.:	18485-38-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{12}H_{22}O$
		Structure:	
Synonyms:	2,4-Dodecadien-1-ol		

History:	Publication date:	2015 (Amendment 48)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	August 10, 2015
	For existing fragrance compounds*:	August 10, 2016
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	2,4-Dodecadien-1-ol, (2E, 4E) should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

2,4-Dodecadien-1-ol, (2E, 4E)

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	INSUFFICIENT DATA

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 2,4-Dodecadien-1-ol, (2E, 4E) and recommends not to use 2,4-Dodecadien-1-ol, (2E, 4E) as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:

The IFRA Standard on 2,4-Dodecadien-1-ol, (2E, 4E) is based on at least one of the following publications:

• The RIFM Safety Assessment on 2,4-Dodecadien-1-ol, (2E, 4E) if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

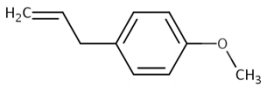
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Estragole

CAS-No.:	140-67-0 1407-27-8 77525-18-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{10}H_{12}O$
		Structure:	
Synonyms:	p-Allylanisole 1-Allyl-4-methoxybenzene Benzene, 1-methoxy-4-(2-propenyl)- Chavicyl methyl ether Isoanethole p-Methoxyallylbenzene 1-Methoxy-4-(2-propen-1-yl)benzene Methyl chavicol		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2009 2015

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.012 %	Category 7A	0.012 %
Category 2	0.023 %	Category 7B	0.012 %
Category 3	0.012 %	Category 8	0.0021 %

Estragole

Category 4	0.42 %	Category 9	0.050 %
Category 5A	0.075 %	Category 10A	0.050 %
Category 5B	0.0062 %	Category 10B	0.050 %
Category 5C	0.012 %	Category 11A	0.0021 %
Category 5D	0.0021 %	Category 11B	0.0021 %
Category 6	0.031 %	Category 12	1.5 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX I**

ANNEX I

Natural Complex Substances (NCS) containing Estragole

Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
0.3	140-67-0	Anise seed oil	Pimpinella anisum L.	8007-70-3	H2.12
80	140-67-0	Basil oil, chemotype estragole	Ocimum basilicum L.	8015-73-4	E2.12
0.95	140-67-0	Basil oil, chemotype linalool	Ocimum basilicum L.	8015-73-4	E2.12
34	140-67-0	Basil oleoresin, chemotype estragole	Ocimum basilicum L.	8015-73-4	E2.21
1.2	140-67-0	Bay leaf oil, terpeneless	Pimenta acris Kostel	68916-05-2	E2.29
0.1	140-67-0	Bay leaf, West Indian, oil	Pimenta racemosa (Mill.) J.W. Moore	8006-78-8	E2.12
4.7	140-67-0	Fennel oil,	Foeniculum	84625-39-8	H2.12

Estragole

		bitter, phellandrene type	vulgare Mill.		
2.1	140-67-0	Fennel oil, bitter,anethole type	Foeniculum vulgare Mill.	8006-84-6	H2.12
3	140-67-0	Fennel oil, sweet	Foeniculum vulgare subsp. vulgare var. Dulce (Mill) Batt.	8006-84-6	H2.12
0.17	140-67-0	Hyssop oil	Hyssopus officinalis L.	8006-83-5	E2.12
0.1	140-67-0	Myrtle oil	Myrtus communis L.	8008-46-6	E2.12
8	140-67-0	Ravensara aromatica oil	Ravansara aromatica Sonn. (v. anisata)	91770-56-8	E2.12
3.3	140-67-0	Star anise oil	Illicium verum Hook, f.	68952-43-2	H2.12
80	140-67-0	Tarragon oil	Artemisia dracunculus L.	8016-88-4	E2.12

This is a non-exhaustive indicative list of typical natural presence for Estragole and is intended to be used in the absence of own analytical data. If analysis has shown that the level of the restricted ingredient in a natural complex substance is different from what is provided in this Annex I, then the analytically determined level should be used in place of the indicative level.
It should further be noted that natural complex substances themselves can be restricted by an IFRA Standard.
For a detailed list of natural contributions, please refer to the Annex I of IFRA Standards, publicly available on the IFRA website (www.ifrafragrance.org).

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Estragole, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

Estragole

The Expert Panel for Fragrance Safety reviewed all the available data for Estragole and recommends the limits for the 12 different product categories, which are the acceptable use levels of Estragole in the various product categories.

REFERENCES:

The IFRA Standard on Estragole is based on at least one of the following publications:

• The RIFM Safety Assessment on Estragole if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

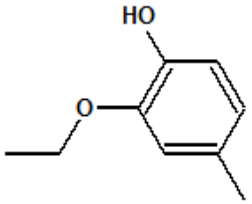
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

2-Ethoxy-4-methylphenol

CAS-No.:	2563-07-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_9H_{12}O_2$
		Structure:	
Synonyms:	2-Ethoxy-p-cresol 2-Ethoxy-4-methylphenol 4-Methyl-2-ethoxyphenol Phenol, 2-ethoxy-4-methyl- Ultravanil (commercial name) Supravanil (commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2008

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.0087 %	Category 7A	0.044 %
Category 2	0.0053 %	Category 7B	0.044 %
Category 3	0.017 %	Category 8	0.0058 %
Category 4	0.099 %	Category 9	0.052 %
Category 5A	0.025 %	Category 10A	0.052 %

2-Ethoxy-4-methylphenol

Category 5B	0.017 %	Category 10B	0.052 %
Category 5C	0.025 %	Category 11A	0.0058 %
Category 5D	0.0058 %	Category 11B	0.0058 %
Category 6	0.0087 %	Category 12	4.2 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

2-Ethoxy-4-methylphenol

Additional information is available in the RIFM safety assessment for 2-Ethoxy-4-methylphenol, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 2-Ethoxy-4-methylphenol and recommends the limits for the 12 different product categories, which are the acceptable use levels of 2-Ethoxy-4-methylphenol in the various product categories.

REFERENCES:

The IFRA Standard on 2-Ethoxy-4-methylphenol is based on at least one of the following publications:

• The RIFM Safety Assessment on 2-Ethoxy-4-methylphenol if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

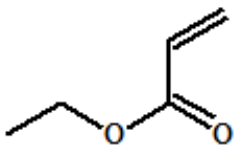
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Ethyl acrylate

CAS-No.:	140-88-5 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_5H_8O_2$
		Structure:	
Synonyms:	Ethyl propenoate 2-Propenoic acid, ethyl ester		

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1974 2002

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Ethyl acrylate should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Ethyl acrylate

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Ethyl acrylate and recommends not to use Ethyl acrylate as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Ethyl acrylate is based on at least one of the following publications:

• The RIFM Safety Assessment on Ethyl acrylate is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

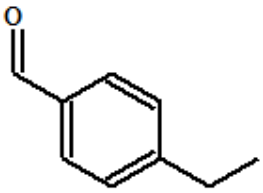
• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Opdyke, D.L.J. (1975), Food and Cosmetics Toxicology 13, 801.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

p-Ethylbenzaldehyde

CAS-No.:	4748-78-1 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_9H_{10}O$
		Structure:	
Synonyms:	4-Ethylbenzaldehyde Benzaldehyde, 4-ethyl		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2013

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.085 %	Category 7A	0.96 %
Category 2	0.025 %	Category 7B	0.96 %
Category 3	0.51 %	Category 8	0.040 %
Category 4	0.47 %	Category 9	0.92 %
Category 5A	0.12 %	Category 10A	0.92 %
Category 5B	0.12 %	Category 10B	3.3 %

p-Ethylbenzaldehyde

Category 5C	0.12 %	Category 11A	0.040 %
Category 5D	0.040 %	Category 11B	0.040 %
Category 6	0.28 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for p-Ethylbenzaldehyde, which can be downloaded from the RIFM Safety Assessment Sheet Database:

p-Ethylbenzaldehyde

http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for p-Ethylbenzaldehyde and recommends the limits for the 12 different product categories, which are the acceptable use levels of p-Ethylbenzaldehyde in the various product categories.

REFERENCES:

The IFRA Standard on p-Ethylbenzaldehyde is based on at least one of the following publications:

• The RIFM Safety Assessment on p-Ethylbenzaldehyde if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

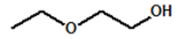
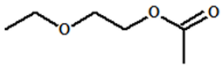
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Ethylene glycol monoethyl ether and its acetate

CAS-No.:	110-80-5 (ether) 111-15-9 (acetate) The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.	**Molecular formula:**	$C_4H_{10}O_2$ $C_6H_{12}O_3$
		Structure:	110-80-5:  111-15-9 (acetate): 
Synonyms:	110-80-5 (ether): Ethylene glycol ethyl ether 2-Ethoxyethanol Ethanol, 2-ethoxy- Cellosolve Oxitol 111-15-9 (acetate): Ethylene glycol ethyl ether acetate 2-Ethoxyethyl acetate Ethyl cellosolve acetate Ethanol, 2-ethoxy-, acetate 1-Acetoxy-2-ethoxyethane		

History:	Publication date:	2004 (Amendment 38)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Ethylene glycol monoethyl ether and its acetate should not be used as a fragrance ingredient.

Ethylene glycol monoethyl ether and its acetate

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**REPRODUCTIVE TOXICITY**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Ethylene glycol monoethyl ether and its acetate and recommends not to use Ethylene glycol monoethyl ether and its acetate as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Ethylene glycol monoethyl ether and its acetate is based on at least one of the following publications:

• The RIFM Safety Assessment on Ethylene glycol monoethyl ether and its acetate is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials

Ethylene glycol monoethyl ether and its acetate

for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

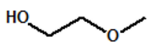
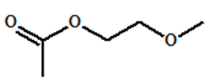
• NIOSH, 1983, Current Intelligence bulletin, No. 39, page 1-20.

• EPA, 1984b, EPA/540/1-86/052; PB86-134632.

• ECETOC, 1985, ECETOC Technical Report, 17.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Ethylene glycol monomethyl ether and its acetate

CAS-No.:	109-86-4 (ether) 110-49-6 (acetate) The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.	**Molecular formula:**	$C_3H_8O_2$ $C_5H_{10}O_3$
		Structure:	109-86-4:  110-49-6 (acetate): 
Synonyms:	109-86-4 (ether): Ethylene glycol methyl ether 2-Methoxyethanol Ethanol, 2-methoxy- Methyl cellosolve 110-49-6 (acetate): Ethylene glycol methyl ether acetate 2-Methoxyethanol acetate 2-Methoxyethyl acetate Methyl cellosolve acetate Ethanol, 2-methoxy-, acetate		

History:	Publication date:	2004 (Amendment 38)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Ethylene glycol monomethyl ether and its acetate should not be used as a fragrance ingredient.

Ethylene glycol monomethyl ether and its acetate

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**REPRODUCTIVE TOXICITY**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Ethylene glycol monomethyl ether and its acetate and recommends not to use Ethylene glycol monomethyl ether and its acetate as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Ethylene glycol monomethyl ether and its acetate is based on at least one of the following publications:

• The RIFM Safety Assessment on Ethylene glycol monomethyl ether and its acetate is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308.

Ethylene glycol monomethyl ether and its acetate

(https://www.ncbi.nlm.nih.gov/pubmed/12069318).

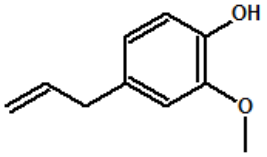
• NIOSH, 1983, Current Intelligence bulletin, No. 39, page 1-20.

• EPA, 1984b, EPA/540/1-86/052; PB86-134632.

• ECETOC, 1985, ECETOC Technical Report, 17.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Eugenol

CAS-No.:	97-53-0 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{10}H_{12}O_2$
		Structure:	
Synonyms:	4-Allylcatechol-2-methyl ether 1-Allyl-4-hydroxy-3-methoxybenzene 4-Allyl-2-methoxyphenol Caryophyllic acid 2-Hydroxy-5-allylanisole 1-Hydroxy-2-methoxy-4-allylbenzene 4-Hydroxy-3-methoxy-1-allylbenzene 1-Hydroxy-2-methoxy-4-propenylbenzene 2-Methoxy-4-allylphenol 2-Methoxy-4-(2-propenyl)phenol Phenol, 2-methoxy-4-(2-propenyl)- Eugenic acid Allylguaiacol 4-Allylguaiacol		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2004 2006 2007 2008

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.45 %	Category 7A	1.4 %

Eugenol

Category 2	0.14 %	Category 7B	1.4 %
Category 3	1.4 %	Category 8	0.21 %
Category 4	2.5 %	Category 9	4.9 %
Category 5A	0.64 %	Category 10A	4.9 %
Category 5B	0.64 %	Category 10B	18 %
Category 5C	0.64 %	Category 11A	0.21 %
Category 5D	0.21 %	Category 11B	0.21 %
Category 6	0.64 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX I**

ANNEX I

Natural Complex Substances (NCS) containing Eugenol

Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
69	97-53-0	Allspice oil	Pimenta officinalis Lindl.	8006-77-7	G2.12
41.4	97-53-0	Allspice oleoresin	Pimenta officinalis Lindl.	8006-77-7	G2.21
1	97-53-0	Armoise vulgaris oil	Artemisia vulgaris L.	68991-20-8	E2.12
0.9	97-53-0	Artemisia arborescens extract	Artemisia arborescens L.	92113-09-2	E2.12
0.03	97-53-0	Balsam oil, Peru	Myroxylon balsamum (L.) Harms var. pereirae (Royle)	8007-00-9	K2.9

Eugenol

			Harms		
0.5	97-53-0	Basil oil, chemotype estragole	Ocimum basilicum L.	8015-73-4	E2.12
7.9	97-53-0	Basil oil, chemotype linalool	Ocimum basilicum L.	8015-73-4	E2.12
0.2	97-53-0	Basil oleoresin, chemotype estragole	Ocimum basilicum L.	8015-73-4	E2.21
73	97-53-0	Bay leaf oil, terpeneless	Pimenta acris Kostel	68916-05-2	E2.29
40	97-53-0	Bay leaf, West Indian, extract	Pimenta acris Kostel	8006-78-8	E2.13
51	97-53-0	Bay leaf, West Indian, oil	Pimenta racemosa (Mill.) J.W. Moore	8006-78-8	E2.12
0.2	97-53-0	Calamus oil	Acorus calamus L.	8015-79-0	A2.12
0.4	97-53-0	Cananga oil	Cananga odorata (Lam.) Hook. f. & Thomson (forma macrophylla Steenis)	68606-83-7	F2.12
18	97-53-0	Carnation absolute	Dianthus caryophyllus L.	8021-43-0	F2.1
0.4	97-53-0	Cascarilla bark oil	Croton eleuteria (L.) W.Wright	8007-06-5	C2.12
0.03	97-53-0	Cassia bark extract	Cinnamomum cassia Blume	8007-80-5	C2.13
0.1	97-53-0	Cassia oil	Cinnamomum aromaticum Nees	8007-80-5	E2.12
0.06	97-53-0	Cassie absolute	Vachellia farnesiana (L.) Willd.	8023-82-3	F2.1
1	97-53-0	Cinnamon bark extract	Cinnamomum zeylanicum Blume	8015-91-6	C2.13
2	97-53-0	Cinnamon bark oil	Cinnamomum zeylanicum Blume	8015-91-6	C2.12
74	97-53-0	Cinnamon leaf oil	Cinnamomum zeylanicum Blume	8015-91-6	E2.12
0.4	97-53-0	Cistus oil	Cistus ladaniferus L.	8016-26-0	E2.12
0.2	97-53-0	Citronella oil, Ceylon type	Cymbopogon nardus (L.) Rendle	8000-29-1	E2.12
0.9	97-53-0	Citronella oil, Java type	Cymbopogon winterianus Jowitt	8000-29-1	E2.12
82	97-53-0	Clove bud extract	Syzygium aromaticum L.	8000-34-8	F2.13
82	97-53-0	Clove bud oil	Syzygium aromaticum L.	8000-34-8	F2.12
85.3	97-53-0	Clove leaf oil	Syzygium aromaticum L.	8000-34-8	E2.12
88	97-53-0	Clove stem oil	Syzygium aromaticum L.	8000-34-8	L2.12
1	97-53-0	Flouve oil	Anthoxanthum odorantum L.	68916-09-6	E2.12

Eugenol

0.02	97-53-0	Genet absolute	Spartium junceum L.	90131-21-8	E2.1
0.2	97-53-0	Hyacinth absolute	Hyacinthus orientalis L.	8023-94-7	F2.1
1	97-53-0	Jasmine concrete	Jasminum grandiflorum L.	8022-96-6	F2.7
2	97-53-0	Jasmine officinale absolute	Jasminum officinale L.	8024-43-9	F2.1
1.1	97-53-0	Laurel leaf oil	Laurus nobilis L	8007-48-5	E2.12
0.2	97-53-0	Lemongrass oil, East Indian	Cymbopogon flexuosus (Nees ex Steudel) Will. Watson	8007-02-1	E2.12
0.2	97-53-0	Lemongrass oil, West Indian	Cymbopogon citratus (DC) Stapf.	8007-02-1	E2.12
0.7	97-53-0	Mace oil	Myristica fragrans Houtt.	8007-12-3	G2.12
0.2	97-53-0	Nutmeg oil	Myristica fragrans Houtt.	8008-45-5	H2.12
0.2	97-53-0	Origanum oil (extractive)	Thymus capitatus L. Hoffmanns & Link	8007-11-2	E2.13
0.07	97-53-0	Osmanthus absolute	Osmanthus fragrans Lour.	68917-05-5	F2.1
0.06	97-53-0	Osmanthus concrete	Osmanthus fragrans Lour.	68917-05-5	F2.7
83	97-53-0	Pimenta leaf oil	Pimenta officinalis Lindl.	8006-77-7	E2.12
2.3	97-53-0	Rose absolute	Rosa x damascena Mill.	90106-38-0	F2.1
1	97-53-0	Rose concrete	Rosa x damascena Mill.	90106-38-0	F2.7
1.2	97-53-0	Rose oil	Rosa x damascena Mill.	8007-01-0	F2.12
1	97-53-0	Snakeroot oil	Asarum canadense L.	8016-69-1	A2.12
0.6	97-53-0	Tarragon oil	Artemisia dracunculus L.	8016-88-4	E2.12
0.05	97-53-0	Thyme absolute	Thymus vulgaris L.	8007-46-3	E2.1
0.1	97-53-0	Thyme oil, red	Thymus vulgaris L.	8007-46-3	E2.12
0.1	97-53-0	Thyme oil, white	Thymus vulgaris L.	8007-46-3	E2.12
0.12	97-53-0	Tolu, balsam, extract	Myroxylon balsamum (L.) Harms.	8024-03-1	K2.13
0.02	97-53-0	Tolu, balsam, gum	Myroxylon balsamum (L.) Harms.	8024-03-1	K2.16
0.5	97-53-0	Tuberose absolute	Poliantes tuberosa L.	8024-05-3	F2.1
0.48	97-53-0	Tuberose concrete	Poliantes tuberosa L.	8024-05-3	F2.7
1	97-53-0	Turmeric oil	Curcuma longa L.	8024-37-1	A2.12

Eugenol

0.55	97-53-0	Verbena absolute	Lippia citriodora (L.) Kunth	8024-12-2	E2.1
0.5	97-53-0	Ylang ylang oil I	Cananga odorata (Lam.) Hook. f. &Thomson oil (forma genuine Steenis)	8006-81-3	F2.12.1
0.5	97-53-0	Ylang ylang oil II	Cananga odorata (Lam.) Hook. f. &Thomson oil (forma genuine Steenis)	8006-81-3	F2.12.2
0.5	97-53-0	Ylang ylang oil III	Cananga odorata (Lam.) Hook. f. &Thomson oil (forma genuine Steenis)	8006-81-3	F2.12.3
0.5	97-53-0	Ylang, Ylang oil extra	Cananga odorata (Lam.) Hook. f. &Thomson oil (forma genuine Steenis)	8006-81-3	F2.12 X

This is a non-exhaustive indicative list of typical natural presence for Eugenol and is intended to be used in the absence of own analytical data. If analysis has shown that the level of the restricted ingredient in a natural complex substance is different from what is provided in this Annex I, then the analytically determined level should be used in place of the indicative level.
It should further be noted that natural complex substances themselves can be restricted by an IFRA Standard.
For a detailed list of natural contributions, please refer to the Annex I of IFRA Standards, publicly available on the IFRA website (www.ifrafragrance.org).

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Eugenol, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

Eugenol

The Expert Panel for Fragrance Safety reviewed all the available data for Eugenol and recommends the limits for the 12 different product categories, which are the acceptable use levels of Eugenol in the various product categories.

REFERENCES:

The IFRA Standard on Eugenol is based on at least one of the following publications:

• The RIFM Safety Assessment on Eugenol if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

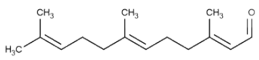
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Farnesal

CAS-No.:	19317-11-4 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{15}H_{24}O$
		Structure:	
Synonyms:	2,6,10-Dodecatrienal, 3,7,11-trimethyl- 3,7,11-Trimethyl dodecatrien-2,6,10-al-1 3,7,11-Trimethyl-2,6,10-dodecatrienal 3,7,11-Trimethyldodeca-2,6,10-trienal		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.11 %	Category 7A	0.34 %
Category 2	0.032 %	Category 7B	0.34 %
Category 3	0.11 %	Category 8	0.051 %
Category 4	0.60 %	Category 9	0.57 %
Category 5A	0.15 %	Category 10A	0.57 %
Category 5B	0.15 %	Category 10B	4.2 %

Farnesal

Category 5C	0.15 %	Category 11A	0.051 %
Category 5D	0.051 %	Category 11B	0.051 %
Category 6	0.11 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX I**

ANNEX I

Natural Complex Substances (NCS) containing Farnesal

Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
0.5	19317-11-4	Ambrette seed absolute	Hibiscus abelmoschus L.	8015-62-1	H2.1
0.2	19317-11-4	Ambrette seed oil	Hibiscus abelmoschus L.	8015-62-1	H2.12
0.01	19317-11-4	Citronella oil, Ceylon type	Cymbopogon nardus (L.) Rendle	8000-29-1	E2.12
0.01	19317-11-4	Citronella oil, Java type	Cymbopogon winterianus Jowitt	8000-29-1	E2.12
0.01	19317-11-4	Rose absolute	Rosa x damascena Mill.	90106-38-0	F2.1
0.07	19317-11-4	Rose oil	Rosa x damascena Mill.	8007-01-0	F2.12
0.2	19317-11-4	Ginger oil	Zingiber officinale Rosc.	8007-08-7	A2.12
0.07	19317-11-4	Orange flower oil, bitter (Neroli and Neroli bigarade)	Citrus aurantium L. ssp. Amara Link	8016-38-4	F2.12
0.02	19317-11-4	Ylang ylang oil I	Cananga odorata (Lam.) Hook. f. &Thomson oil (forma genuine Steenis)	8006-81-3	F2.12.1

Farnesal

0.02	19317-11-4	Ylang, Ylang oil extra	Cananga odorata (Lam.) Hook. f. &Thomson oil (forma genuine Steenis)	8006-81-3	F2.12 X

This is a non-exhaustive indicative list of typical natural presence for Farnesal and is intended to be used in the absence of own analytical data. If analysis has shown that the level of the restricted ingredient in a natural complex substance is different from what is provided in this Annex I, then the analytically determined level should be used in place of the indicative level.
It should further be noted that natural complex substances themselves can be restricted by an IFRA Standard.
For a detailed list of natural contributions, please refer to the Annex I of IFRA Standards, publicly available on the IFRA website (www.ifrafragrance.org).

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Farnesal, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Farnesal and recommends the limits for the 12 different product categories, which are the acceptable use levels of Farnesal in the various product categories.

REFERENCES:

The IFRA Standard on Farnesal is based on at least one of the following publications:

• The RIFM Safety Assessment on Farnesal if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D.,

Farnesal

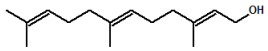
Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Farnesol

CAS-No.:	4602-84-0 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{15}H_{26}O$
		Structure:	
Synonyms:	2,6,10-Dodecatrien-1-ol, 3,7,11-trimethyl- Farnesyl alcohol Trimethyl dodecatrienol 3,7,11-Trimethyl-2,6,10-dodecatrien-1-ol		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1979 1980 2002 2006

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION / SPECIFICATION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.21 %	Category 7A	2.4 %
Category 2	0.062 %	Category 7B	2.4 %
Category 3	1.2 %	Category 8	0.12 %
Category 4	1.2 %	Category 9	2.3 %
Category 5A	0.29 %	Category 10A	8.1 %
Category 5B	0.29 %	Category 10B	8.1 %

Farnesol

Category 5C	0.29 %	Category 11A	4.5 %
Category 5D	0.29 %	Category 11B	4.5 %
Category 6	0.68 %	Category 12	No Restriction

FRAGRANCE INGREDIENT SPECIFICATION:	Farnesol should only be used as a fragrance ingredient if it contains a minimum of 96% of farnesol isomers as determined by GLC.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX I**

ANNEX I

Natural Complex Substances (NCS) containing Farnesol

Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
5	4602-84-0	Ambrette seed absolute	Hibiscus abelmoschus L.	8015-62-1	H2.1
3	4602-84-0	Ambrette seed oil	Hibiscus abelmoschus L.	8015-62-1	H2.12
0.2	4602-84-0	Ambrette tincture	Hibiscus abelmoschus L.	8015-62-1	H2.31
1.2	4602-84-0	Arnica absolute	Arnica montana L.	8057-65-6	F2.1
5	4602-84-0	Arnica oils, montana	Arnica montana L.	8057-65-6	F2.12
0.1	4602-84-0	Artemisia arborescens extract	Artemisia arborescens L.	92113-09-2	E2.13
0.2	4602-84-0	Baccharis dracunculifolia oil	Baccharis dracunculifolia	68991-21-9	E2.12
0.1	4602-84-0	Cabreuva oil	Myrocarpus frondosus Fr. Allem	68188-03-4	D2.12

Farnesol

0.5	4602-84-0	Calamus oil	Acorus calamus L.	8015-79-0	A2.12
2	4602-84-0	Cananga oil	Cananga odorata (Lam.) Hook. f. & Thomson (forma macrophylla Steenis)	68606-83-7	F2.12
0.01	4602-84-0	Cinnamon bark oil, Laos	Cinnamomum loureiroi Nees	97659-68-2	C2.12
0.12	4602-84-0	Cinnamon leaf oil	Cinnamomum zeylanicum Blume	8015-91-6	E2.12
0.1	4602-84-0	Gardenia tahitensis oil	Gardenia tahitensis DC.	683748-01-8	F2.13
0.6	4602-84-0	Jasmine sambac absolute	Jasminum sambac (L.) Aiton	103798-23-6	F2.24
8	4602-84-0	Orange blossoms absolute	Citrus aurantium L. spp. Amara Link	8016-38-4	F2.1
1.8	4602-84-0	Orange flower oil, bitter (neroli and neroli bigarade)	Citrus aurantium L. spp. Amara Link	8016-38-4	F2.12
1	4602-84-0	Palmarosa oil	Cymbopogon martinii (Roxb.) Wats	8014-19-5	E2.12
1	4602-84-0	Rose oil	Rosa x damascena Mill.	8007-01-0	F2.12
0.7	4602-84-0	Sandalwood oil	Santalum album L.	8006-87-9	D2.12
11	4602-84-0	Sandalwood oil, Australian	Santalum spicata (R.Br.) A.DC.	8024-35-9	D2.12
0.7	4602-84-0	Sandalwood oil, New Caledonian	Santalum austrocaledonicum Vieill	91845-48-6	D2.12
0.3	4602-84-0	Tuberose absolute	Poliantes tuberosa L.	8024-05-3	F2.1
0.3	4602-84-0	Tuberose concrete	Poliantes tuberosa L.	8024-05-3	F2.7
0.1	4602-84-0	Yarrow oil	Achillea millefolium L.	8022-07-9	E2.12
1.4	4602-84-0	Ylang ylang oil I	Cananga odorata (Lam.) Hook. f. &Thomson oil (forma genuine Steenis)	8006-81-3	F2.12.1
2	4602-84-0	Ylang ylang oil II	Cananga odorata (Lam.) Hook. f. &Thomson oil (forma genuine Steenis)	8006-81-3	F2.12.2
1.5	4602-84-0	Ylang ylang oil III	Cananga odorata (Lam.) Hook. f. &Thomson oil (forma genuine Steenis)	8006-81-3	F2.12.3
1.5	4602-84-0	Ylang, Ylang	Cananga odorata	8006-81-3	F2.12 X

Farnesol

		oil extra	(Lam.) Hook. f. &Thomson oil (forma genuine Steenis)		
2.5	4602-84-0	Ylang, Ylang oil, terpene-free	Cananga odorata (Lam.) Hook. f. &Thomson oil (forma genuine Steenis)	68952-44-3	F2.29

This is a non-exhaustive indicative list of typical natural presence for Farnesol and is intended to be used in the absence of own analytical data. If analysis has shown that the level of the restricted ingredient in a natural complex substance is different from what is provided in this Annex I, then the analytically determined level should be used in place of the indicative level.
It should further be noted that natural complex substances themselves can be restricted by an IFRA Standard.
For a detailed list of natural contributions, please refer to the Annex I of IFRA Standards, publicly available on the IFRA website (www.ifrafragrance.org).

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Farnesol, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Farnesol and recommends the limits for the 12 different product categories, which are the acceptable use levels of Farnesol in the various product categories.
In addition, they recommend to use Farnesol according to the specification above mentioned.

REFERENCES:

The IFRA Standard on Farnesol is based on at least one of the following publications:

• The RIFM Safety Assessment on Farnesol if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

Farnesol

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Fig leaf absolute

CAS-No.:	68916-52-9 90028-74-3 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	Not applicable.
Synonyms:	Ficus carica absolute Fig leaf absolute (Ficus carica)		

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1980 1983 2002

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Fig leaf absolute should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Fig leaf absolute

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION, PHOTOTOXICITY**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Fig leaf absolute and recommends not to use Fig leaf absolute as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Fig leaf absolute is based on at least one of the following publications:

• The RIFM Safety Assessment on Fig leaf absolute is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

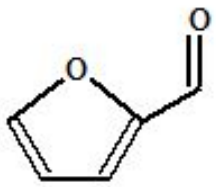
• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Opdyke, D.L.J., Letizia, C. (1982), Food and Chemical Toxicology 20, 691.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Furfural

CAS-No.:	98-01-1 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_5H_4O_2$
		Structure:	
Synonyms:	2-Formylfuran Fural Furaldehyde 2-Furaldehyde 2-Furancarbonal 2-Furancarboxaldehyde Furfuraldehyde α-Furfuraldehyde 2-Furylcarboxaldehyde Pyromucic aldehyde		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2013

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.0010 %	Category 7A	0.0010 %
Category 2	0.0010 %	Category 7B	0.0010 %
Category 3	0.0010 %	Category 8	0.0010 %

Furfural

Category 4	0.0010 %	Category 9	0.0010 %
Category 5A	0.0010 %	Category 10A	0.0010 %
Category 5B	0.0010 %	Category 10B	0.0010 %
Category 5C	0.0010 %	Category 11A	0.0010 %
Category 5D	0.0010 %	Category 11B	0.0010 %
Category 6	0.0010 %	Category 12	0.050 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Furfural has been found in natural extracts but only at trace levels.

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**CARCINOGENICITY**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one

Furfural

endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Furfural, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Furfural and recommends the limits for the 12 different product categories, which are the acceptable use levels of Furfural in the various product categories.

REFERENCES:

The IFRA Standard on Furfural is based on at least one of the following publications:

• The RIFM Safety Assessment on Furfural is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014) (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

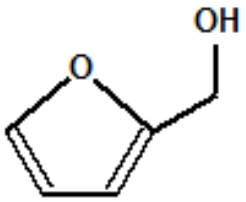
• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• SCCS (Scientific Committee on Consumer Safety), Opinion on furfural, 27 March 2012. (https://ec.europa.eu/health/scientific_committees/consumer_safety/docs/sccs_o_083.pdf).

Additional information on the application of IFRA Standards is available in the Guidance to IFRA Standards, publicly available at www.ifrafragrance.org.

Furfuryl alcohol

CAS-No.:	98-00-0 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_5H_6O_2$
		Structure:	
Synonyms:	2-Furancarbinol 2-Furanmethanol Furfuralcohol Furfuryl alcohol α-Furylcarbinol 2-Furylcarbinol 2-Furylmethanol 2-Hydroxymethylfuran		

History:	Publication date:	2015 (Amendment 48)	Previous Publications:	2009

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Furfuryl alcohol should not be used as a fragrance ingredient. The natural extracts containing Furfuryl alcohol should not be used as substitutes for this substance.

Furfuryl alcohol

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Furfuryl alcohol has been found in natural extracts but only at trace levels.
Those contributions from other sources like Coffee extracts or certain types of Cade oil have been evaluated. On the basis of the established maximum level of Furfuryl alcohol in these commercially available natural sources, exposure to this substance from the use of these oils and extracts is not significant and not regarded of concern from a consumer safety point of view.
For more information, please also refer to the note on contributions from other sources in Chapter 1 of the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**INSUFFICIENT DATA**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Furfuryl alcohol and recommends not to use Furfuryl alcohol as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:

The IFRA Standard on Furfuryl alcohol is based on at least one of the following publications:

• The RIFM Safety Assessment on Furfuryl alcohol if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

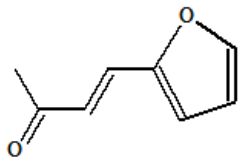
• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

Furfuryl alcohol

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Furfurylidene acetone

CAS-No.:	623-15-4 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_8H_8O_2$
		Structure:	
Synonyms:	3-Buten-2-one, 4-(2-furanyl)- Furfuralacetone 4-(2-Furyl)-3-buten-2-one		

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Furfurylidene acetone should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Furfurylidene acetone

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**INSUFFICIENT DATA**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Furfurylidene acetone and recommends not to use Furfurylidene acetone as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:

The IFRA Standard on Furfurylidene acetone is based on at least one of the following publications:

• The RIFM Safety Assessment on Furfurylidene acetone if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

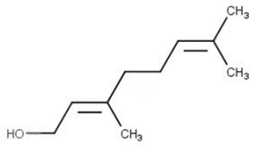
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Geraniol

CAS-No.:	106-24-1 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{10}H_{18}O$
		Structure:	
Synonyms:	3,7-Dimethylocta-2,6-dien-1-ol 2,6-Octadien-1-ol, 3,7-dimethyl-, (e)- 2,6-Dimethyl-2,6-octadien-8-ol trans-3,7-Dimethyl-2,6-octadien-1-ol trans-3,7-Dimethyl-2,7-octadien-1-ol Geraniol 60 (commercial name) Geraniol Coeur (commercial name) Geraniol extra (commercial name) Geraniol SP (commercial name) Geraniol Supra (commercial name) Meranol (commercial name) Rhodinol pure (commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2007

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.85 %	Category 7A	9.6 %
Category 2	0.25 %	Category 7B	9.6 %

Geraniol

Category 3	5.1 %	Category 8	0.50 %
Category 4	4.7 %	Category 9	9.2 %
Category 5A	1.2 %	Category 10A	33 %
Category 5B	1.2 %	Category 10B	33 %
Category 5C	1.2 %	Category 11A	18 %
Category 5D	1.2 %	Category 11B	18 %
Category 6	2.8 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX I**

ANNEX I

Natural Complex Substances (NCS) containing Geraniol

Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
1	106-24-1	Armoise vulgaris oil	Artemisia vulgaris L.	68991-20-8	E2.12
1.3	106-24-1	Balm oil	Melissa officinalis L.	8014-71-9	E2.12
0.2	106-24-1	Basil oil, chemotype linalool	Ocimum basilicum L.	8015-73-4	E2.12
0.1	106-24-1	Bergamot oil, expressed	Citrus bergamia (Risso) Wright & Arn.	8007-75-8	G2.5
0.1	106-24-1	Bergamot oil, furocoumarin free	Citrus bergamia (Risso) Wright & Arn.	68648-33-9	G2.33
0.7	106-24-1	Cananga oil	Cananga odorata	68606-83-7	F2.12

Geraniol

			(Lam.) Hook. f. & Thomson (forma macrophylla Steenis)		
0.7	106-24-1	Cardamom seed extract	Elettaria cardamomum (L.) Maton	8000-66-6	H2.13
1	106-24-1	Cardamom seed oil	Elettaria cardamomum (L.) Maton	8000-66-6	H2.12
1.1	106-24-1	Carrot seed oil	Daucus carota L.	8015-88-1	H2.12
1	106-24-1	Cassie absolute	Vachellia farnesiana (L.) Willd.	8023-82-3	F2.1
0.3	106-24-1	Cassie extract	Vachellia farnesiana (L.) Willd.	8023-82-3	F2.13
17.7	106-24-1	Citronella oil, Ceylon type	Cymbopogon nardus (L.) Rendle	8000-29-1	E2.12
22	106-24-1	Citronella oil, Java type	Cymbopogon winterianus Jowitt	8000-29-1	E2.12
0.7	106-24-1	Citrus hystrix extract	Citrus hystrix DC	91771-50-5	G2.5
0.2	106-24-1	Clary sage concrete	Salvia sclarea L.	8016-63-5	E2.7
1.2	106-24-1	Clary sage oil	Salvia sclarea L.	8016-63-5	E2.12
0.8	106-24-1	Coriander herb oil	Corindrum sativum L.	8008-52-4	E2.12
1.6	106-24-1	Coriander seed oil	Coriandrum sativum L.	8008-52-4	H2.12
0.16	106-24-1	Eucalyptus radiata oil	Eucalyptus radiata Sieber ex DC oil	92201-64-4	E2.12
0.03	106-24-1	Fir needle oil, Siberian	Abies siberica Ledeb (Pinaceae)	8021-29-2	E2.12
0.13	106-24-1	Genet absolute	Spartium junceum L.	90131-21-8	E2.1
9	106-24-1	Geranium absolute	Pelargonium graveolens l'Hertier ex Aiton	8000-46-2	E2.1
17.7	106-24-1	Geranium oil	Pelargonium graveolens l'Hertier ex Aiton	8000-46-2	E2.12
17	106-24-1	Geranium oil African	Pelargonium odoratissimum L'Heritier	8000-46-2	E2.12
10	106-24-1	Geranium oil, terpene-free	Pelargonium graveolens l'Hertier ex Aiton	68916-44-9	E2.29
0.5	106-24-1	Ginger oil	Zingiber officinale Rosc.	8007-08-7	A2.12
0.1	106-24-1	Ginger oleoresin	Zingiber officinale Rosc.	8007-08-7	A2.21
0.04	106-24-1	Gingergrass oil	Cymbopogon winterianus Jowitt	8023-92-5	E2.12
0.1	106-24-1	Grapefruit oil,	Citrus paradisi Macf.	68916-46-1	G2.29

Geraniol

		terpeneless			
0.4	106-24-1	Helichrysum absolute	Helichrysum angustifolium DC.	8023-95-8	E2.1
0.7	106-24-1	Helichrysum oil	Helichrysum angustifolium DC.	8023-95-8	E2.12
0.4	106-24-1	Ho Leaf oil	Cinnamomum camphora (L.) J.Presl	8022-91-1	E2.12
0.2	106-24-1	Hop oil	Humulus lupus L.	8007-04-3	G2.9
0.03	106-24-1	Hyacinth absolute	Hyacinthus orientalis L.	8023-94-7	F2.1
0.1	106-24-1	Jasmine officinale absolute	Jasminum officinale L.	8024-43-9	F2.1
0.1	106-24-1	Juniper berry oil	Juniperus communis L.	8002-68-4	G2.12
0.2	106-24-1	Kumquat oil, Fortunella margarita	Fortunella (Lour.) Swingle	938464-05-2	G2.5
0.05	106-24-1	Laurel leaf oil	Laurus nobilis L	8007-48-5	E2.12
0.3	106-24-1	Lavandin abrialis oil	Lavandula x intermedia abrialis	8022-15-9	F2.12
0.2	106-24-1	Lavandin oil	Lavandula officinalis x Lavandula latifolia	8022-15-9	F2.12
0.9	106-24-1	Lavender absolute	Lavandula angustifolia angustifolia	8000-28-0	F2.1
0.1	106-24-1	Lavender concrete	Lavandula angustifolia angustifolia	8000-28-0	F2.7
0.2	106-24-1	Lavender oil	Lavandula angustifolia angustifolia	8000-28-0	F2.12
0.5	106-24-1	Lavendin super oil	Lavendula super	93685-88-2	F2.12
0.03	106-24-1	Lemon extract	Citrus limon (L.) Burm. f.	84929-31-7	G2.20
1	106-24-1	Lemon oil folded (5X)	Citrus limon (L.) Burm. f.	8008-56-8	G2.6
2	106-24-1	Lemon oil folded (10X)	Citrus limon (L.) Burm. f.	8008-56-8	G2.6
2	106-24-1	Lemon oil terpeneless	Citrus limon (L.) Burm. f.	68648-39-7	G2.29
0.1	106-24-1	Lemon oil, distilled	Citrus limon (L.) Burm. f.	8008-56-8	G2.24
0.1	106-24-1	Lemon oil, expressed	Citrus limon (L.) Burm. f.	8008-56-8	G2.5
0.1	106-24-1	Lemon oil, furocoumarin free	Citrus limon (L.) Burm. f.	68916-89-2	G2.33
0.1	106-24-1	Lemon oil. essence	Citrus limon (L.) Burm. f.	8008-56-8	G2.10
3.8	106-24-1	Lemongrass oil, East Indian	Cymbopogon flexuosus (Nees ex Steudel) Will. Watson	8007-02-1	E2.12

Geraniol

2.3	106-24-1	Lemongrass oil, West Indian	Cymbopogon citratus (DC) Stapf.	8007-02-1	E2.12
0.03	106-24-1	Lime oil, cold pressed, furocoumarin free	Citrus aurantifolia (Christman) Swingle	68916-83-6	G2.33
1	106-24-1	Linaloe wood oil	Bursera penicillata (DC.) Engl.	8006-86-8	D2.12
1.1	106-24-1	Litsea cubeba oil	Litsea Cubeba(Lour.) Pers.	68855-99-2	G2.12
0.2	106-24-1	Mandarin oil, terpeneless	Citrus reticulata Blanco	68917-20-4	G2.29
0.2	106-24-1	Marjoram oil, Spanish	Origanum mastichina L.	8016-33-9	E2.12
0.3	106-24-1	Marjoram oil, sweet	Origanum majorana L.	8015-01-8	E2.12
0.1	106-24-1	Marjoram oleoresin	Origanum majorana L.	84082-58-6	E2.21
0.4	106-24-1	Michelia alba extract	Michelia x alba DC. (champaca x montana)	8006-76-6	F2.13
0.4	106-24-1	Myrtle oil	Myrtus communis L.	8008-46-6	E2.12
1	106-24-1	Orange blossoms absolute	Citrus aurantium L. spp. Amara Link	8016-38-4	F2.1
2.8	106-24-1	Orange flower oil, bitter (neroli and neroli bigarade)	Citrus aurantium L. spp. Amara Link	8016-38-4	F2.12
10.2	106-24-1	Orange flower water absolute	Citrus aurantium L. spp. Amara Link	8030-28-2	F2.54
1	106-24-1	Orange leaf absolute	Citrus aurantium L. spp. Amara Link	8030-28-2	E2.1
0.04	106-24-1	Orange oil, bitter	Citrus aurantium L. spp. Amara Link	68916-04-1	G2.5
1	106-24-1	Orange peel oil, sweet terpeneless	Citrus sinensis (L.) Osbeck	68606-94-0	G2.29
1	106-24-1	Orange sweet oil folded	Citrus sinensis (L.) Osbeck	8008-57-9	G2.6
1.2	106-24-1	Osmanthus absolute	Osmanthus fragrans Lour.	68917-05-5	F2.1
1.2	106-24-1	Osmanthus concrete	Osmanthus fragrans Lour.	68917-05-5	F2.7
82.4	106-24-1	Palmarosa oil	Cymbopogon martinii (Roxb.) Wats	8014-19-5	E2.12
0.1	106-24-1	Petitgrain bergamot oil	Citrus bergamia (Risso) Wright & Arn.	8007-75-8	E2.12
2.4	106-24-1	Petitgrain	Citrus aurantium	8014-17-3	E2.12

Geraniol

		bigarade oil	L. spp. Amara Link		
2	106-24-1	Petitgrain lemon oil	Citrus limon (L.) Burm. f.	8048-51-9	E2.12
3	106-24-1	Petitgrain oil terpeneless, Paraguay	Citrus aurantium L. spp. Amara Link	68915-85-5	E2.29
3	106-24-1	Petitgrain oil terpenes, Paraguay	Citrus aurantium L. spp. Amara Link	68917-61-3	E2.30
3	106-24-1	Petitgrain oil, Paraguay	Citrus aurantium L. spp. Amara Link	8014-17-3	E2.12
5	106-24-1	Rose absolute	Rosa x damascena Mill.	90106-38-0	F2.1
2.7	106-24-1	Rose concrete	Rosa x damascena Mill.	90106-38-0	F2.7
20	106-24-1	Rose oil	Rosa x damascena Mill.	8007-01-0	F2.12
0.5	106-24-1	Rose water stronger	Rosa x centifolia L.	8007-01-0	F2.54
0.8	106-24-1	Rosewood oil	Aniba rosaeodora (Ducke) var amazonica	8015-77-8	D2.12
1	106-24-1	Snakeroot oil	Asarum canadense L.	8016-69-1	A2.12
0.2	106-24-1	Tangerine oil terpeneless	Citrus reticulata blanco	68607-01-2	G2.29
0.05	106-24-1	Thyme absolute	Thymus vulgaris L.	8007-46-3	E2.1
0.1	106-24-1	Thyme oil, red	Thymus vulgaris L.	8007-46-3	E2.12
0.1	106-24-1	Thyme oil, white	Thymus vulgaris L.	8007-46-3	E2.12
0.1	106-24-1	Tuberose absolute	Poliantes tuberosa L.	8024-05-3	F2.1
0.1	106-24-1	Tuberose concrete	Poliantes tuberosa L.	8024-05-3	F2.7
4.1	106-24-1	Verbena absolute	Lippia citriodora (L.) Kunth	8024-12-2	E2.1
0.1	106-24-1	Wormwood oil	Artemisia absinthium L.	8008-93-3	E2.12
0.3	106-24-1	Ylang ylang oil I	Cananga odorata (Lam.) Hook. f. &Thomson oil (forma genuine Steenis)	8006-81-3	F2.12.1
1	106-24-1	Ylang ylang oil II	Cananga odorata (Lam.) Hook. f. &Thomson oil (forma genuine Steenis)	8006-81-3	F2.12.2
0.3	106-24-1	Ylang ylang oil III	Cananga odorata (Lam.) Hook. f. &Thomson oil (forma genuine Steenis)	8006-81-3	F2.12.3
1	106-24-1	Ylang, Ylang oil extra	Cananga odorata (Lam.) Hook. f.	8006-81-3	F2.12 X

Geraniol

			&Thomson oil (forma genuine Steenis)		
1	106-24-1	Ylang, Ylang oil, terpene-free	Cananga odorata (Lam.) Hook. f. &Thomson oil (forma genuine Steenis)	68952-44-3	F2.29

This is a non-exhaustive indicative list of typical natural presence for Geraniol and is intended to be used in the absence of own analytical data. If analysis has shown that the level of the restricted ingredient in a natural complex substance is different from what is provided in this Annex I, then the analytically determined level should be used in place of the indicative level.
It should further be noted that natural complex substances themselves can be restricted by an IFRA Standard.
For a detailed list of natural contributions, please refer to the Annex I of IFRA Standards, publicly available on the IFRA website (www.ifrafragrance.org).

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Geraniol, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Geraniol and recommends the limits for the 12 different product categories, which are the acceptable use levels of Geraniol in the various product categories.

REFERENCES:

The IFRA Standard on Geraniol is based on at least one of the following publications:

• The RIFM Safety Assessment on Geraniol if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G.,

Geraniol

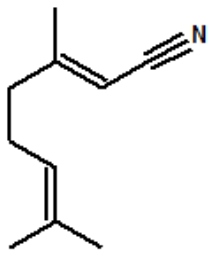
Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Geranyl nitrile

CAS-No.:	5146-66-7 5585-39-7 31983-27-4 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{10}H_{15}N$
		Structure:	
Synonyms:	(2E)-3,7-dimethylocta-2,6-dienenitrile 3,7-Dimethyl-2,6-octadienenitrile Geranonitrile (isomer unspecified) 2,6-Octadienenitrile, 3,7-dimethyl- Citranile (commercial name) Citralva (commercial name) Geranitrile (commercial name)		

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	2006

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Geranyl nitrile should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE**

Geranyl nitrile

	SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**GENOTOXICITY**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The material has been reviewed by the Expert Panel for Fragrance Safety with the conclusion that it should not be used as a fragrance ingredient, or in fragrance ingredients above unavoidable trace levels until additional data is available and considered sufficient to support the safe use of these ingredients.

REFERENCES:

The IFRA Standard on Geranyl nitrile is based on at least one of the following publications:

• The RIFM Safety Assessment on Geranyl nitrile if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Grapefruit oil expressed

CAS-No.:	8016-20-4 90045-43-5 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	Not applicable.
Synonyms:	Not applicable.		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1992 2015

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	4.0 %	Category 7A	No Restriction
Category 2	4.0 %	Category 7B	4.0 %
Category 3	4.0 %	Category 8	4.0 %
Category 4	4.0 %	Category 9	No Restriction
Category 5A	4.0 %	Category 10A	No Restriction
Category 5B	4.0 %	Category 10B	4.0 %

Grapefruit oil expressed

Category 5C	4.0 %	Category 11A	No Restriction
Category 5D	4.0 %	Category 11B	4.0 %
Category 6	4.0 %	Category 12	No Restriction

Fragrance ingredient restriction - Note box

The Standard is set due to the phototoxic effects of Grapefruit oil expressed. For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the Guidance for the use of IFRA Standards.

If the level of furocoumarins is unknown, the restriction level specified in this IFRA Standard applies.

Combination effects of phototoxic ingredients are only taken into consideration for the furocoumarin-containing fragrance ingredients (extracts) listed in the IFRA Standard of Citrus oils and other furocoumarins containing essential oils.

If combinations of furocoumarin-containing phototoxic fragrance ingredients (extracts) are used, the use levels must be reduced accordingly. The sum of the concentrations of all furocoumarin-containing phototoxic fragrance ingredients (extracts), expressed in % of their recommended upper concentration level in the consumer product shall not exceed 100.

For qualities of the expressed oil in which the less volatile components have been concentrated by partial or total removal of the terpene fraction, this limit should be reduced in proportion to the degree of concentration.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Grapefruit oil expressed

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	PHOTOTOXICITY

RIFM SUMMARIES:

These recommendations are made in order to promote Good Manufacturing Practices (GMP) considering the large variations in the Bergapten content of commercial samples of Grapefruit oil expressed.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Grapefruit oil expressed and recommends the limits for the 12 different product categories, which are the acceptable use levels of Grapefruit oil expressed in the various product categories.

REFERENCES:

The IFRA Standard on Grapefruit oil expressed is based on at least one of the following publications:

• Young at al., J. Photochem. Photobiol. B,7, 231 (1990).

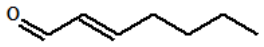
• Dubertret et al. ibid 7, 251 (1990).

• Dubertret et al. ibid, 7, 362 (1990).

• IFRA Standard on Citrus oils and other furocoumarins containing essential oils.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

trans-2-Heptenal

CAS-No.:	18829-55-5 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_7H_{12}O$
		Structure:	
Synonyms:	beta-Butylacrolein 3-Butylacrolein (E)-2-Hepten-1-al 2-Heptenal, (E)-		

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1985 1989 2002

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	trans-2-Heptenal should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

trans-2-Heptenal

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for trans-2-Heptenal and recommends not to use trans-2-Heptenal as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on trans-2-Heptenal is based on at least one of the following publications:

• The RIFM Safety Assessment on trans-2-Heptenal is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

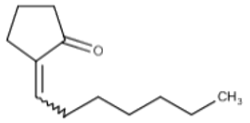
• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Ford, R.A. (1988), Food and Chemical Toxicology 26, 331.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

2-Heptylidene cyclopentan-1-one

CAS-No.:	39189-74-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{12}H_{20}O$
		Structure:	
Synonyms:	2-Heptylidenecyclopentanone 2-Heptylidenecyclopentan-1-one Cyclopentanone, 2-heptylidene-		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2011

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.077 %	Category 7A	0.88 %
Category 2	0.023 %	Category 7B	0.88 %
Category 3	0.46 %	Category 8	0.045 %
Category 4	0.43 %	Category 9	0.84 %
Category 5A	0.11 %	Category 10A	3.0 %
Category 5B	0.11 %	Category 10B	3.0 %

2-Heptylidene cyclopentan-1-one

Category 5C	0.11 %	Category 11A	1.7 %
Category 5D	0.11 %	Category 11B	1.7 %
Category 6	0.25 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 2-Heptylidene cyclopentan-1-one, which can be downloaded from the RIFM Safety Assessment Sheet Database:

2-Heptylidene cyclopentan-1-one

http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 2-Heptylidene cyclopentan-1-one and recommends the limits for the 12 different product categories, which are the acceptable use levels of 2-Heptylidene cyclopentan-1-one in the various product categories.

REFERENCES:

The IFRA Standard on 2-Heptylidene cyclopentan-1-one is based on at least one of the following publications:

• The RIFM Safety Assessment on 2-Heptylidene cyclopentan-1-one if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

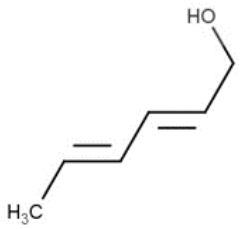
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

2,4-Hexadien-1-ol

CAS-No.:	111-28-4 17102-64-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_6H_{10}O$
		Structure:	
Synonyms:	1-Hydroxy-2,4-hexadiene Hexa-2,4-dien-1-ol Sorbic alcohol Sorbyl alcohol Hexadienol (commercial name)		

History:	Publication date:	2015 (Amendment 48)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	August 10, 2015
	For existing fragrance compounds*:	August 10, 2016
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	2,4-Hexadien-1-ol should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE**

2,4-Hexadien-1-ol

	GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	INSUFFICIENT DATA

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 2,4-Hexadien-1-ol and recommends not to use 2,4-Hexadien-1-ol as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:

The IFRA Standard on 2,4-Hexadien-1-ol is based on at least one of the following publications:

• The RIFM Safety Assessment on 2,4-Hexadien-1-ol if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

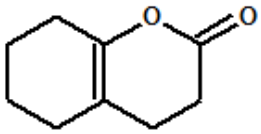
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Hexahydrocoumarin

CAS-No.:	700-82-3 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_9H_{12}O_2$
		Structure:	
Synonyms:	2H-1-Benzopyran-2-one, 3,4,5,6,7,8-hexahydro- Coumarin, hexahydro- Coumarin, 3,4,5,6,7,8-hexahydro- 1-Cyclohexene-1-propanoic acid, 2-hydroxy-, d-lactone 3,4,5,6,7,8-Hexahydro-2H-1-benzopyran-2-one		

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1980 2002

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Hexahydrocoumarin should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Hexahydrocoumarin

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Hexahydrocoumarin and recommends not to use Hexahydrocoumarin as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Hexahydrocoumarin is based on at least one of the following publications:

• The RIFM Safety Assessment on Hexahydrocoumarin if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

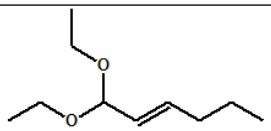
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

trans-2-Hexenal diethyl acetal

CAS-No.:	67746-30-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{10}H_{20}O_2$
		Structure:	
Synonyms:	1,1-Diethoxy-trans-2-hexene (E)-2-Hexenal diethyl acetal 2-Hexene, 1,1-diethoxy-, (2E)-		

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1985 1989 2002

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	trans-2-Hexenal diethyl acetal should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

trans-2-Hexenal diethyl acetal

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for trans-2-Hexenal diethyl acetal and recommends not to use trans-2-Hexenal diethyl acetal as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on trans-2-Hexenal diethyl acetal is based on at least one of the following publications:

• The RIFM Safety Assessment on trans-2-Hexenal diethyl acetal is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

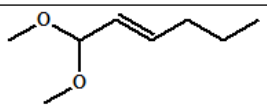
• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Ford, R.A. (1988), Food and Chemical Toxicology 26, 345.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

trans-2-Hexenal dimethyl acetal

CAS-No.:	18318-83-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_8H_{16}O_2$
		Structure:	
Synonyms:	1,1-Dimethoxy-trans-2-hexene 2-Hexene, 1,1-dimethoxy-, (2E)-		

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1985 1989 2002

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	trans-2-Hexenal dimethyl acetal should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

trans-2-Hexenal dimethyl acetal

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for trans-2-Hexenal dimethyl acetal and recommends not to use trans-2-Hexenal dimethyl acetal as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on trans-2-Hexenal dimethyl acetal is based on at least one of the following publications:

• The RIFM Safety Assessment on trans-2-Hexenal dimethyl acetal is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

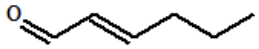
• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Ford, R.A. (1988), Food and Chemical Toxicology 26, 347.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

trans-2-Hexenal

CAS-No.:	6728-26-3 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_6H_{10}O$
		Structure:	
Synonyms:	2-Hexenal, (E)- Hexen-2-al Leaf aldehyde beta-Propyl acrolein		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1989 1992 2006 2007 2008

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.0018 %	Category 7A	0.021 %
Category 2	0.00055 %	Category 7B	0.021 %
Category 3	0.011 %	Category 8	0.00087 %
Category 4	0.010 %	Category 9	0.020 %
Category 5A	0.0026 %	Category 10A	0.020 %

trans-2-Hexenal

Category 5B	0.0026 %	Category 10B	0.072 %
Category 5C	0.0026 %	Category 11A	0.00087 %
Category 5D	0.00087 %	Category 11B	0.00087 %
Category 6	0.0060 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

trans-2-Hexenal has been found in natural extracts but only at trace levels.

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

trans-2-Hexenal

Additional information is available in the RIFM safety assessment for trans-2-Hexenal, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for trans-2-Hexenal and recommends the limits for the 12 different product categories, which are the acceptable use levels of trans-2-Hexenal in the various product categories.

REFERENCES:

The IFRA Standard on trans-2-Hexenal is based on at least one of the following publications:

• The RIFM Safety Assessment on trans-2-Hexenal if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

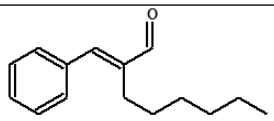
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

α-Hexyl cinnamic aldehyde

CAS-No.:	101-86-0 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{15}H_{20}O$
		Structure:	
Synonyms:	2-Benzylideneoctanal Hexyl cinnamal α-Hexyl cinnamaldehyde Hexyl cinnamic aldehyde α-n-Hexylcinnamic aldehyde Hexyl cinnamyl α-n-Hexyl-β-phenylacrolein Octanal, 2-(phenylmethylene)- Jasmonal H (commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2007 2013

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	1.8 %	Category 7A	20 %
Category 2	0.53 %	Category 7B	20 %
Category 3	11 %	Category 8	1.0 %
Category 4	9.9 %	Category 9	19 %

α-Hexyl cinnamic aldehyde

Category 5A	2.5 %	Category 10A	69 %
Category 5B	2.5 %	Category 10B	69 %
Category 5C	2.5 %	Category 11A	38 %
Category 5D	2.5 %	Category 11B	38 %
Category 6	5.8 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX II**

ANNEX II

α-Hexyl cinnamic aldehyde	CAS number (Aldehyde)	Schiff base	CAS number (Schiff base)	Level of restricted aldehyde in the Schiff base (%)
α-Hexylcinnamaldehyde	101-86-0	α-Hexylcinnamic aldehyde methyl anthranilate (or Jasmea H)	67924-13-4	61.8

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

α-Hexyl cinnamic aldehyde

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for α-Hexyl cinnamic aldehyde, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for α-Hexyl cinnamic aldehyde and recommends the limits for the 12 different product categories, which are the acceptable use levels of α-Hexyl cinnamic aldehyde in the various product categories.

REFERENCES:

The IFRA Standard on α-Hexyl cinnamic aldehyde is based on at least one of the following publications:

• The RIFM Safety Assessment on α-Hexyl cinnamic aldehyde if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

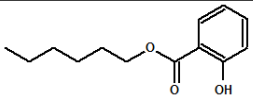
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Hexyl salicylate

CAS-No.:	6259-76-3 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{13}H_{18}O_3$
		Structure:	
Synonyms:	Hexyl 2-hydroxybenzoate Benzoic acid, 2-hydroxy-, hexyl ester Hexyl o-hydroxybenzoate		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2007

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.092 %	Category 7A	0.38 %
Category 2	0.80 %	Category 7B	0.38 %
Category 3	0.25 %	Category 8	0.10 %
Category 4	6.5 %	Category 9	1.2 %
Category 5A	2.7 %	Category 10A	1.2 %
Category 5B	0.30 %	Category 10B	2.2 %

Hexyl salicylate

Category 5C	0.46 %	Category 11A	0.10 %
Category 5D	0.10 %	Category 11B	0.10 %
Category 6	0.0092 %	Category 12	64 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Hexyl salicylate, which can be downloaded from the RIFM Safety Assessment Sheet Database:

Hexyl salicylate

http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Hexyl salicylate and recommends the limits for the 12 different product categories, which are the acceptable use levels of Hexyl salicylate in the various product categories.

REFERENCES:

The IFRA Standard on Hexyl salicylate is based on at least one of the following publications:

• The RIFM Safety Assessment on Hexyl salicylate if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

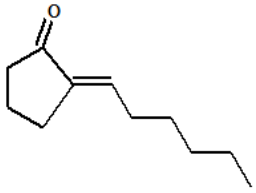
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

α-Hexylidene cyclopentanone

CAS-No.:	17373-89-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{11}H_{18}O$
		Structure:	
Synonyms:	2-Hexylidene cyclopentanone Cyclopentanone, 2-hexylidene- 2-Hexylidene cyclopentanone Jasmalone (commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1983 1994 2008

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.023 %	Category 7A	0.26 %
Category 2	0.0069 %	Category 7B	0.26 %
Category 3	0.14 %	Category 8	0.014 %
Category 4	0.13 %	Category 9	0.25 %
Category 5A	0.033 %	Category 10A	0.90 %
Category 5B	0.033 %	Category 10B	0.90 %

α-Hexylidene cyclopentanone

Category 5C	0.033 %	Category 11A	0.50 %
Category 5D	0.033 %	Category 11B	0.50 %
Category 6	0.076 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for α-Hexylidene cyclopentanone, which can be downloaded from the RIFM Safety Assessment Sheet Database:

α-Hexylidene cyclopentanone

http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for α-Hexylidene cyclopentanone and recommends the limits for the 12 different product categories, which are the acceptable use levels of α-Hexylidene cyclopentanone in the various product categories.

REFERENCES:

The IFRA Standard on α-Hexylidene cyclopentanone is based on at least one of the following publications:

• The RIFM Safety Assessment on α-Hexylidene cyclopentanone if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Hydroabietyl alcohol, Dihydroabietyl alcohol

CAS-No.:	13393-93-6 26266-77-3 1333-89-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.	**Molecular formula:**	$C_{20}H_{36}O$
Synonyms:	Abitol (mixture of different hydroabietyl alcohols)		

History:	Publication date:	2004 (Amendment 38)	Previous Publications:	1974 1976 1995

Implementation dates:	For new submissions*:	May 6, 2004
	For existing fragrance compounds*:	May 6, 2005
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Hydroabietyl alcohol, Dihydroabietyl alcohol should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA**

Hydroabietyl alcohol, Dihydroabietyl alcohol

	STANDARDS)

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Hydroabietyl alcohol, Dihydroabietyl alcohol and recommends not to use Hydroabietyl alcohol, Dihydroabietyl alcohol as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Hydroabietyl alcohol, Dihydroabietyl alcohol is based on at least one of the following publications:

• The RIFM Safety Assessment on Hydroabietyl alcohol, Dihydroabietyl alcohol is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

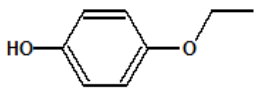
• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• RIFM Monograph 323, Fd. Cosmet. Toxicol. 12, 919-921 (1974).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Hydroquinone monoethyl ether

CAS-No.:	622-62-8 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_8H_{10}O_2$
		Structure:	
Synonyms:	1-Ethoxy-4-hydroxybenzene p-Ethoxyphenol Phenol, 4-ethoxy- 4-Ethoxyphenol		

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1982 1983 2002

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Hydroquinone monoethyl ether should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Hydroquinone monoethyl ether

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DEPIGMENTATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Hydroquinone monoethyl ether and recommends not to use Hydroquinone monoethyl ether as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Hydroquinone monoethyl ether is based on at least one of the following publications:

• The RIFM Safety Assessment on Hydroquinone monoethyl ether is available at the RIFM Safety Assessment Sheet Database:
http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014).
(http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308.
(https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• E. Frenk, (1969), Arch. Klin. Exp. Derm. 235, 16.

• E. Frenk (1970), Ann. Derm. Syph (Paris) 97, 287.

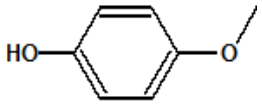
• E. Frenk & F. Ott (1971), Journal of Investigative Dermatology 56, 287.

• W. Wohlrab and R.P. Zaumseil (1976), Derm. Monatsschr. 162, 908.

Hydroquinone monoethyl ether

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Hydroquinone monomethyl ether

CAS-No.:	150-76-5 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_7H_8O_2$
		Structure:	
Synonyms:	4-Hydroxyanisole p-Hydroxyanisole 4-Methoxyphenol p-Methoxyphenol Phenol, p-methoxy-		

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1983 2002

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Hydroquinone monomethyl ether should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Hydroquinone monomethyl ether

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DEPIGMENTATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Hydroquinone monomethyl ether and recommends not to use Hydroquinone monomethyl ether as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Hydroquinone monomethyl ether is based on at least one of the following publications:

• The RIFM Safety Assessment on Hydroquinone monomethyl ether is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• E. Frenk, (1969), Arch. Klin. Exp. Derm. 235, 16.

• E. Frenk (1970), Ann. Derm. Syph (Paris) 97, 287.

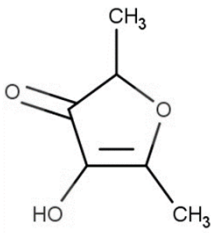
• E. Frenk & F. Ott (1971), Journal of Investigative Dermatology 56, 287.

Hydroquinone monomethyl ether

• W. Wohlrab and R.P. Zaumseil (1976), Derm. Monatsschr. 162, 908.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

4-Hydroxy-2,5-dimethyl-3(2H)-furanone

CAS-No.:	3658-77-3 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_6H_8O_3$
		Structure:	
Synonyms:	3(2H)-Furanone, 4-hydroxy-2,5-dimethyl- 2,5-Dimethyl-4-hydroxy-2,3-dihydrofuran-3-one 4-Hydroxy-2,5-dimethylfuran-3(2H)-one Dimethylhydroxy furanone Strawberry furanone Furaneol (Commercial name) Neofuraneol (Commercial name) Pineapple compound (Commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.045 %	Category 7A	0.52 %
Category 2	0.014 %	Category 7B	0.52 %
Category 3	0.27 %	Category 8	0.021 %
Category 4	0.25 %	Category 9	0.49 %

4-Hydroxy-2,5-dimethyl-3(2H)-furanone

Category 5A	0.064 %	Category 10A	0.49 %
Category 5B	0.064 %	Category 10B	1.8 %
Category 5C	0.064 %	Category 11A	0.021 %
Category 5D	0.021 %	Category 11B	0.021 %
Category 6	0.15 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

4-Hydroxy-2,5-dimethyl-3(2H)-furanone has been found in natural extracts but only at trace levels.

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is

4-Hydroxy-2,5-dimethyl-3(2H)-furanone

derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 4-Hydroxy-2,5-dimethyl-3(2H)-furanone, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 4-Hydroxy-2,5-dimethyl-3(2H)-furanone and recommends the limits for the 12 different product categories, which are the acceptable use levels of 4-Hydroxy-2,5-dimethyl-3(2H)-furanone in the various product categories.

REFERENCES:

The IFRA Standard on 4-Hydroxy-2,5-dimethyl-3(2H)-furanone is based on at least one of the following publications:

• The RIFM Safety Assessment on 4-Hydroxy-2,5-dimethyl-3(2H)-furanone if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

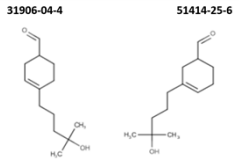
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

3 and 4-(4-Hydroxy-4-methylpentyl)-3-cyclohexene-1-carboxaldehyde (HMPCC)

CAS-No.:	31906-04-4 51414-25-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{13}H_{22}O_2$
		Structure:	
Synonyms:	3-Cyclohexen-1-carboxaldehyde, 4-(4-hydroxy-4-methylpentyl)- 3-Cyclohexen-1-carboxaldehyde, 3-(4-hydroxy-4-methylpentyl)- Hydroxyisohexyl 3-cyclohexene carboxaldehyde 4-(4-Hydroxy-4-methylpenyl) cyclohex-3-enecarbaldehyde 3-(4-Hydroxy-4-methylpentyl) cyclohex-3-ene-1-carbaldehyde HICC Lyral (commercial name) Kovanol (commercial name) Mugonal (commercial name) Landolal (commercial name) Cyclohexal (commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2003 2008 2009 2013

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.020 %	Category 7A	0.020 %
Category 2	0.020 %	Category 7B	0.020 %

3 and 4-(4-Hydroxy-4-methylpentyl)-3-cyclohexene-1-carboxaldehyde (HMPCC)

Category 3	0.10 %	Category 8	0.067 %
Category 4	0.20 %	Category 9	0.20 %
Category 5A	0.20 %	Category 10A	0.20 %
Category 5B	0.20 %	Category 10B	0.20 %
Category 5C	0.20 %	Category 11A	0.067 %
Category 5D	0.067 %	Category 11B	0.067 %
Category 6	0.20 %	Category 12	91 %

Fragrance ingredient restriction - Note box

The restrictions as given for the individual categories are not based on the Quantitative Risk Assessment (QRA) methodology but solely represent a pragmatic approach to address the specific situation for 3 and 4-(4-Hydroxy-4-methylpentyl)-3-cyclohexene-1-carboxaldehyde (HMPCC).

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX II**

ANNEX II

3 and 4-(4-Hydroxy-4-methylpentyl)-3-cyclohexene-1-carboxaldehyde (HMPCC)	CAS number (Aldehyde)	Schiff base	CAS number (Schiff base)	Level of restricted aldehyde in the Schiff base (%)

3 and 4-(4-Hydroxy-4-methylpentyl)-3-cyclohexene-1-carboxaldehyde (HMPCC)

3 and 4-(4-Hydroxy-4-methylpentyl)-3-cyclohexene-1-carboxaldehyde (Lyral)	31906-04-4; 51414-25-6	Lyral-methyl anthranilate (or Lyrantion)	67634-12-2	61.3

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 3 and 4-(4-Hydroxy-4-methylpentyl)-3-cyclohexene-1-carboxaldehyde (HMPCC), which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 3 and 4-(4-Hydroxy-4-methylpentyl)-3-cyclohexene-1-carboxaldehyde (HMPCC) and recommends the limits for the 12 different product categories, which are the acceptable use levels of 3 and 4-(4-Hydroxy-4-methylpentyl)-3-cyclohexene-1-carboxaldehyde (HMPCC) in the various product categories.

REFERENCES:

The IFRA Standard on 3 and 4-(4-Hydroxy-4-methylpentyl)-3-cyclohexene-1-carboxaldehyde (HMPCC) is based on at least one of the following publications:

• The RIFM Safety Assessment on 3 and 4-(4-Hydroxy-4-methylpentyl)-3-cyclohexene-1-carboxaldehyde (HMPCC) if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016

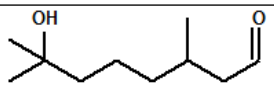
3 and 4-(4-Hydroxy-4-methylpentyl)-3-cyclohexene-1-carboxaldehyde (HMPCC)

(http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Hydroxycitronellal

CAS-No.:	107-75-5 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{10}H_{20}O_2$
		Structure:	
Synonyms:	Citronellalhydrate 3,7-Dimethyl-7-hydroxyoctanal Octanal, 7-hydroxy-3,7-dimethyl- Oxydihydrocitronellal Laurinal (commercial name) Laurine (commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1987 2000 2005 2007 2008 2013

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.38 %	Category 7A	4.3 %
Category 2	0.11 %	Category 7B	4.3 %
Category 3	2.3 %	Category 8	0.22 %
Category 4	2.1 %	Category 9	4.1 %

Hydroxycitronellal

Category 5A	0.53 %	Category 10A	15 %
Category 5B	0.53 %	Category 10B	15 %
Category 5C	0.53 %	Category 11A	8.2 %
Category 5D	0.53 %	Category 11B	8.2 %
Category 6	1.2 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX II**

ANNEX II

Hydroxycitronellal	CAS number (Aldehyde)	Schiff base	CAS number (Schiff base)	Level of restricted aldehyde in the Schiff base (%)
Hydroxycitronellal	107-75-5	Hydroxycitronellal-Indole (or Indolene 50%)	68527-79-7	63.5
Hydroxycitronellal	107-75-5	Hydroxycitronellal methyl anthranilate (or Aurantiol, Aurantium, Aurantoin)	89-43-0	56.4

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

Hydroxycitronellal

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Hydroxycitronellal, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Hydroxycitronellal and recommends the limits for the 12 different product categories, which are the acceptable use levels of Hydroxycitronellal in the various product categories.

REFERENCES:

The IFRA Standard on Hydroxycitronellal is based on at least one of the following publications:

• The RIFM Safety Assessment on Hydroxycitronellal if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

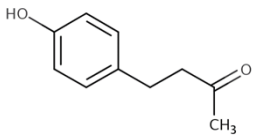
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

4-(4-Hydroxyphenyl)butan-2-one

CAS-No.:	5471-51-2 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{10}H_{12}O_2$
		Structure:	
Synonyms:	p-Hydroxybenzylacetone 1-p-Hydroxyphenyl-3-butanone 2-Butanone, 4-(4-hydroxyphenyl)- 4-(p-Hydroxyphenyl)-2-butanone Raspberry ketone Corps N 112 (commercial name) Frambinon (commercial name) Oxanone (commercial name) Oxyphenylon (commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.68 %	Category 7A	0.41 %
Category 2	1.0 %	Category 7B	0.41 %
Category 3	0.27 %	Category 8	0.045 %
Category 4	1.0 %	Category 9	1.0 %

4-(4-Hydroxyphenyl)butan-2-one

Category 5A	1.0 %	Category 10A	1.0 %
Category 5B	0.14 %	Category 10B	1.0 %
Category 5C	0.27 %	Category 11A	0.045 %
Category 5D	0.045 %	Category 11B	0.045 %
Category 6	0.82 %	Category 12	78 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

4-(4-Hydroxyphenyl)butan-2-one has been found in natural extracts but only at trace levels.

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DEPIGMENTATION**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal

4-(4-Hydroxyphenyl)butan-2-one

sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 4-(4-Hydroxyphenyl)butan-2-one, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 4-(4-Hydroxyphenyl)butan-2-one and recommends the limits for the 12 different product categories, which are the acceptable use levels of 4-(4-Hydroxyphenyl)butan-2-one in the various product categories.

REFERENCES:

The IFRA Standard on 4-(4-Hydroxyphenyl)butan-2-one is based on at least one of the following publications:

• The RIFM Safety Assessment on 4-(4-Hydroxyphenyl)butan-2-one if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

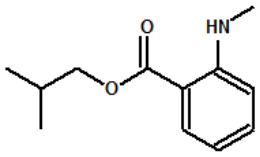
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Isobutyl N-methylanthranylate

CAS-No.:	65505-24-0 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{12}H_{17}NO_2$
		Structure:	
Synonyms:	Benzoic acid, 2-(methylamino)-, 2-methylpropyl ester Isobutyl 2-(methylamino)benzoate		

History:	Publication date:	2009 (Amendment 44)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	August 7, 2009
	For existing fragrance compounds*:	August 7, 2010
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**SPECIFICATION**

FRAGRANCE INGREDIENT SPECIFICATION:	The material has been identified for having the potential of forming nitrosamines in nitrosating systems. Downstream users therefore have to be notified of the presence of the material and its potential, to be able to consider adequate protective measures.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must

Isobutyl N-methylanthranylate

	also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**POTENTIAL OF NITROSAMINE FORMATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Isobutyl N-methylanthranylate. Based on their expert judgement, they recommend to use the fragrance ingredient according to its specification mentioned above.

REFERENCES:

The IFRA Standard on Isobutyl N-methylanthranylate is based on at least one of the following publications:

• The RIFM Safety Assessment on Isobutyl N-methylanthranylate if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

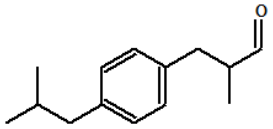
Isobutyl N-methylanthranylate

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Nitrosamine policy as contained in the EU Cosmetics Directive 76/768/EEC and its Amendments.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

p-Isobutyl-α-methyl hydrocinnamaldehyde

CAS-No.:	6658-48-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{14}H_{20}O$
		Structure:	
Synonyms:	p-Isobutyl-α-methyl hydro cinnamic aldehyde Benzenepropanal, α-methyl-4-(2-methylpropyl)- 3-(4-Isobutyl-phenyl)-2-methyl-propionaldehyde 2-Methyl-3-[4-(2-methylpropyl)phenyl]propanal 3-(p-Cumenyl)-2-methylpropionaldehyde Cyclamen homoaldehyde Rhodial (commercial name) Silvial (commercial name) Suzaral (commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2009

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.080 %	Category 7A	0.72 %
Category 2	0.053 %	Category 7B	0.72 %
Category 3	0.80 %	Category 8	0.083 %
Category 4	0.99 %	Category 9	1.9 %

p-Isobutyl-α-methyl hydrocinnamaldehyde

Category 5A	0.25 %	Category 10A	1.9 %
Category 5B	0.25 %	Category 10B	5.4 %
Category 5C	0.25 %	Category 11A	0.083 %
Category 5D	0.083 %	Category 11B	0.083 %
Category 6	0.080 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to

p-Isobutyl-α-methyl hydrocinnamaldehyde

the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for p-Isobutyl-α-methyl hydrocinnamaldehyde, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for p-Isobutyl-α-methyl hydrocinnamaldehyde and recommends the limits for the 12 different product categories, which are the acceptable use levels of p-Isobutyl-α-methyl hydrocinnamaldehyde in the various product categories.

REFERENCES:

The IFRA Standard on p-Isobutyl-α-methyl hydrocinnamaldehyde is based on at least one of the following publications:

• The RIFM Safety Assessment on p-Isobutyl-α-methyl hydrocinnamaldehyde if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

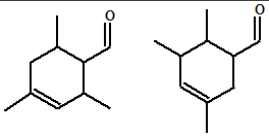
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Isocyclocitral

CAS-No.:	1335-66-6 1423-46-7 67634-07-5 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.	**Molecular formula:**	$C_{10}H_{16}O$
		Structure:	
Synonyms:	1335-66-6: 1-Formyl-[2,4,6-]&[3,5,6-]trimethyl-3-cyclohexene [2,4,6-]&[3,5,6-]Trimethyl-3-cyclohexene-1-carboxaldehyde 1423-46-7: 3-Cyclohexene-1-carboxaldehyde, 2,4,6-trimethyl- Neocyclocitral 2,4,6-Trimethylcyclohex-3-enecarbaldehyde 2,4,6-Trimethyl-3-cyclohexenylcarboxaldehyde 2,4,6-Trimethyl-3-cyclohexene-1-carbaldehyde 67634-07-5: 3-Cyclohexene-1-carboxaldehyde, 3,5,6-trimethyl- 3,5,6-Trimethylcyclohex-3-ene-1-carbaldehyde		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2007

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):

Isocyclocitral

Category 1	0.54 %	Category 7A	6.1 %
Category 2	0.16 %	Category 7B	6.1 %
Category 3	3.2 %	Category 8	0.32 %
Category 4	3.0 %	Category 9	5.9 %
Category 5A	0.76 %	Category 10A	21 %
Category 5B	0.76 %	Category 10B	21 %
Category 5C	0.76 %	Category 11A	12 %
Category 5D	0.76 %	Category 11B	12 %
Category 6	1.8 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

Isocyclocitral

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Isocyclocitral, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Isocyclocitral and recommends the limits for the 12 different product categories, which are the acceptable use levels of Isocyclocitral in the various product categories.

REFERENCES:

The IFRA Standard on Isocyclocitral is based on at least one of the following publications:

• The RIFM Safety Assessment on Isocyclocitral if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

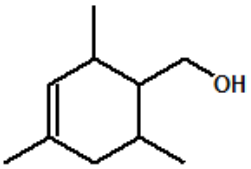
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Isocyclogeraniol

CAS-No.:	68527-77-5 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{10}H_{18}O$
		Structure:	
Synonyms:	3-Cyclohexene-1-methanol, 2,4,6-trimethyl- 2,4,6-Trimethyl-3-cyclohexene-1-methanol		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1995 2005 2008

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.29 %	Category 7A	3.3 %
Category 2	0.087 %	Category 7B	3.3 %
Category 3	1.8 %	Category 8	0.17 %
Category 4	1.6 %	Category 9	3.2 %
Category 5A	0.41 %	Category 10A	11 %
Category 5B	0.41 %	Category 10B	11 %

Isocyclogeraniol

Category 5C	0.41 %	Category 11A	6.3 %
Category 5D	0.41 %	Category 11B	6.3 %
Category 6	0.96 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Isocyclogeraniol, which can be downloaded from the RIFM Safety Assessment Sheet Database:

Isocyclogeraniol

http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Isocyclogeraniol and recommends the limits for the 12 different product categories, which are the acceptable use levels of Isocyclogeraniol in the various product categories.

REFERENCES:

The IFRA Standard on Isocyclogeraniol is based on at least one of the following publications:

• The RIFM Safety Assessment on Isocyclogeraniol if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

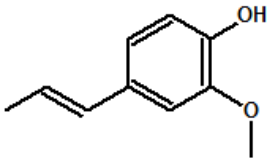
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Isoeugenol

CAS-No.:	97-54-1 5932-68-3 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{10}H_{12}O_2$
		Structure:	
Synonyms:	1-Hydroxy-2-methoxy-4-propen-1-ylbenzene 4-Hydroxy-3-methoxy-1-propen-1-ylbenzene 4-Hydroxy-3-methoxy-1-propenylbenzene iso-Eugenol 3-Methoxy-4-hydroxy-1-propen-1-ylbenzene 2-Methoxy-4-propenylphenol 2-Methoxy-4-(1-propenyl)phenol Phenol, 2-methoxy-4-(1-propenyl)- 4-Propenylguaiacol		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1980 1998 2001 2004 2007

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.019 %	Category 7A	0.22 %
Category 2	0.0057 %	Category 7B	0.22 %
Category 3	0.12 %	Category 8	0.0090 %

Isoeugenol

Category 4	0.11 %	Category 9	0.21 %
Category 5A	0.027 %	Category 10A	0.21 %
Category 5B	0.027 %	Category 10B	0.75 %
Category 5C	0.027 %	Category 11A	0.0090 %
Category 5D	0.0090 %	Category 11B	0.0090 %
Category 6	0.063 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX I**

ANNEX I

Natural Complex Substances (NCS) containing Isoeugenol

Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
0.03	97-54-1	Balsam oil, Peru	Myroxylon balsamum (L.) Harms var. pereirae (Royle) Harms	8007-00-9	K2.9
0.1	97-54-1	Cassia oil	Cinnamomum aromaticum Nees	8007-80-5	E2.12
0.01	97-54-1	Cinnamon bark extract	Cinnamomum zeylanicum Blume	8015-91-6	C2.13
0.02	97-54-1	Cinnamon bark oil	Cinnamomum zeylanicum Blume	8015-91-6	C2.12
0.13	97-54-1	Cinnamon leaf oil	Cinnamomum zeylanicum Blume	8015-91-6	E2.12
0.1	97-54-1	Jasmine officinale absolute	Jasminum officinale L.	8024-43-9	F2.1
0.5	97-54-1	Lemongrass oil, East	Cymbopogon flexuosus (Nees	8007-02-1	E2.12

Isoeugenol

		Indian	ex Steudel) Will. Watson		
0.5	97-54-1	Lemongrass oil, West Indian	Cymbopogon citratus (DC) Stapf.	8007-02-1	E2.12
0.5	97-54-1	Nutmeg oil	Myristica fragrans Houtt.	8008-45-5	H2.12
0.08	97-54-1	Tolu, balsam, extract	Myroxylon balsamum (L.) Harms.	8024-03-1	K2.13
0.02	97-54-1	Tolu, balsam, gum	Myroxylon balsamum (L.) Harms.	8024-03-1	K2.16
1.5	97-54-1	Tuberose absolute	Poliantes tuberosa L.	8024-05-3	F2.1
1.5	97-54-1	Tuberose concrete	Poliantes tuberosa L.	8024-05-3	F2.7
0.5	97-54-1	Ylang ylang oil I	Cananga odorata (Lam.) Hook. f. &Thomson oil (forma genuine Steenis)	8006-81-3	F2.12.1
0.5	97-54-1	Ylang ylang oil II	Cananga odorata (Lam.) Hook. f. &Thomson oil (forma genuine Steenis)	8006-81-3	F2.12.2
0.5	97-54-1	Ylang ylang oil III	Cananga odorata (Lam.) Hook. f. &Thomson oil (forma genuine Steenis)	8006-81-3	F2.12.3
0.5	97-54-1	Ylang, Ylang oil extra	Cananga odorata (Lam.) Hook. f. &Thomson oil (forma genuine Steenis)	8006-81-3	F2.12 X
0.5	97-54-1	Ylang, Ylang oil, terpene-free	Cananga odorata (Lam.) Hook. f. &Thomson oil (forma genuine Steenis)	68952-44-3	F2.29

This is a non-exhaustive indicative list of typical natural presence for Isoeugenol and is intended to be used in the absence of own analytical data. If analysis has shown that the level of the restricted ingredient in a natural complex substance is different from what is provided in this Annex I, then the analytically determined level should be used in place of the indicative level.
It should further be noted that natural complex substances themselves can be restricted by an IFRA Standard.
For a detailed list of natural contributions, please refer to the Annex I of IFRA Standards, publicly available on the IFRA website (www.ifrafragrance.org).

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

Isoeugenol

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Isoeugenol, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Isoeugenol and recommends the limits for the 12 different product categories, which are the acceptable use levels of Isoeugenol in the various product categories.

REFERENCES:

The IFRA Standard on Isoeugenol is based on at least one of the following publications:

• The RIFM Safety Assessment on Isoeugenol if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

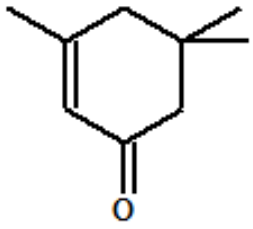
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Isophorone

CAS-No.:	78-59-1 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_9H_{14}O$
		Structure:	
Synonyms:	2-Cyclohexen-1-one, 3,5,5-trimethyl- Isoacetophorone 3,5,5-Trimethyl-2-cyclohexen-1-one		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2008

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION / RESTRICTION**

FRAGRANCE INGREDIENT PROHIBITION:	Isophorone as such should not be used as fragrance ingredient. Natural extracts containing Isophorone should not be used as substitutes for this substance.

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	See notebox	Category 7A	See notebox
Category 2	See notebox	Category 7B	See notebox
Category 3	See notebox	Category 8	See notebox

Isophorone

Category 4	See notebox	Category 9	See notebox
Category 5A	See notebox	Category 10A	See notebox
Category 5B	See notebox	Category 10B	See notebox
Category 5C	See notebox	Category 11A	See notebox
Category 5D	See notebox	Category 11B	See notebox
Category 6	See notebox	Category 12	See notebox

Fragrance ingredient restriction - Note box

On the basis of established maximum concentration levels of this substance in commercially available natural sources (like essential oils and extracts), exposure to this substance from the use of these oils and extracts is not significant and the use of these oils is authorized as long as the level of Isophorone in the finished product does not exceed 0.0013%.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX I**

ANNEX I

Natural Complex Substances (NCS) containing Isophorone

Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
0.2	78-59-1	Saffron	Crocus sativus L.	8022-19-3	F2.19
0.2	78-59-1	Cistus oil	Cistus ladaniferus L.	8016-26-0	E2.12

This is a non-exhaustive indicative list of typical natural presence for Isophorone and is intended to be used in the absence of own analytical data. If analysis has shown that the level of the restricted ingredient in a natural complex substance is different from what is provided in this Annex I, then the analytically determined level should be used in place of the indicative level.
It should further be noted that natural complex substances themselves can be restricted by an IFRA Standard.

Isophorone

For a detailed list of natural contributions, please refer to the Annex I of IFRA Standards, publicly available on the IFRA website (www.ifrafragrance.org).

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	INSUFFICIENT DATA

RIFM SUMMARIES:

The dose response for preputial gland carcinoma was identified as the critical effect for deriving an oral exposure threshold. Thus the NOAEL for preputial gland carcinoma from the 2-year US-NTP carcinogenicity study was determined to be 250 mg/kg/day.

The U.S. Environmental Protection Agency (EPA) reported that over a life-time, an individual could consume 40 µg/l (0.04 mg/l) Isophorone and would have no more than a one-in-a-million increased chance of developing cancer as a direct result of ingesting water containing this chemical. According to the EPA, drinking water consumption is 2 l/day. As such, 40 µg/l X 2l/day consumption = 80 µg/person/day. Using a 60 kg bodyweight/person the Reference Dose (RfD) can be derived for humans as, 80/60 = 1.33 µg/kg/day.
This dose was used in the Creme RIFM Model to derive the acceptable safe use of 0.0013% in the final product.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Isophorone and recommends not to use Isophorone as or in fragrance ingredients in any finished product application.
However, the presence of Isophorone in natural extracts used as ingredients in finished consumer products is tolerated only according to the upper concentration level mentioned in the Notebox if the natural extracts are not being used to provide an alternative, indirect source of the banned substance.

REFERENCES:

The IFRA Standard on Isophorone is based on at least one of the following publications:

• The RIFM Safety Assessment on Isophorone if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

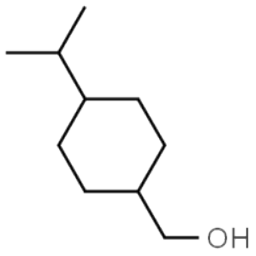
Isophorone

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

cis,trans-4-(Isopropyl)cyclohexanemethanol

CAS-No.:	5502-75-0 13828-37-0 13674-19-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{10}H_{20}O$
		Structure:	
Synonyms:	(4-propan-2-ylcyclohexyl)methanol 4-(1-methylethyl)-cyclohexanemethanol 4-Isopropylcyclohexylmethanol (4-Isopropylcyclohexyl)methanol Reaction mass of trans-4-(isopropyl)cyclohexanemethanol and cis-4-(isopropyl)cyclohexanemethanol cis-4-(Isopropyl)cyclohexanemethanol trans-4-(Isopropyl)cyclohexanemethanol Cyclohexanemethanol, 4-(1-methylethyl)-, cis Cyclohexanemethanol, 4-(1-methylethyl)-, trans p-Menthan-7-ol cis-p-Menthan-7-ol trans-p-Menthan-7-ol Mayol (commercial name) Meijiff (commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):

cis,trans-4-(Isopropyl)cyclohexanemethanol

Category 1	0.25 %	Category 7A	0.13 %
Category 2	0.39 %	Category 7B	0.13 %
Category 3	0.099 %	Category 8	0.049 %
Category 4	4.7 %	Category 9	0.39 %
Category 5A	1.2 %	Category 10A	0.39 %
Category 5B	0.15 %	Category 10B	1.1 %
Category 5C	0.20 %	Category 11A	0.049 %
Category 5D	0.049 %	Category 11B	0.049 %
Category 6	0.0099 %	Category 12	28 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

cis,trans-4-(Isopropyl)cyclohexanemethanol

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for cis,trans-4-(Isopropyl)cyclohexanemethanol, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for cis,trans-4-(Isopropyl)cyclohexanemethanol and recommends the limits for the 12 different product categories, which are the acceptable use levels of cis,trans-4-(Isopropyl)cyclohexanemethanol in the various product categories.

REFERENCES:

The IFRA Standard on cis,trans-4-(Isopropyl)cyclohexanemethanol is based on at least one of the following publications:

• The RIFM Safety Assessment on cis,trans-4-(Isopropyl)cyclohexanemethanol if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

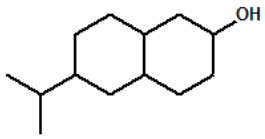
• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

cis,trans-4-(Isopropyl)cyclohexanemethanol

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

6-Isopropyl-2-decalol

CAS-No.:	34131-99-2 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{13}H_{24}O$
		Structure:	
Synonyms:	Decahydro-6-isopropyl-2-naphthol Decahydro-6-(1-methylethyl)-2-naphthalenol 6-Isopropyl-2-decahydronaphthalenol 6-Isopropyldecalol 2-Naphthalenol, decahydro-6-(1-methylethyl)- Decatol		

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1979 1989 2002

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	6-Isopropyl-2-decalol should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA**

6-Isopropyl-2-decalol

	STANDARDS)

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 6-Isopropyl-2-decalol and recommends not to use 6-Isopropyl-2-decalol as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on 6-Isopropyl-2-decalol is based on at least one of the following publications:

• The RIFM Safety Assessment on 6-Isopropyl-2-decalol is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

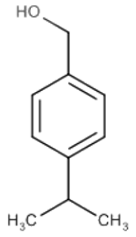
• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Ford, R.A., (1988), Food and Chemical Toxicology 26, 367.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

p-Isopropylbenzyl alcohol

CAS-No.:	536-60-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{10}H_{14}O$
		Structure:	
Synonyms:	(4-Isopropylphenyl)methanol Benzenemethanol, 4-(1-methylethyl)- p-iso-Propylbenzyl alcohol p-Cymen-7-ol Cumin alcohol Cuminic alcohol Cuminol Cuminyl alcohol		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.45 %	Category 7A	0.80 %
Category 2	0.14 %	Category 7B	0.80 %
Category 3	0.40 %	Category 8	0.21 %
Category 4	2.5 %	Category 9	2.0 %

p-Isopropylbenzyl alcohol

Category 5A	0.64 %	Category 10A	2.0 %
Category 5B	0.64 %	Category 10B	4.8 %
Category 5C	0.64 %	Category 11A	0.21 %
Category 5D	0.21 %	Category 11B	0.21 %
Category 6	1.5 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX I**

ANNEX I

Natural Complex Substances (NCS) containing p-Isopropylbenzyl alcohol

Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
0.4	536-60-7	Carrot seed oil	Daucus carota L.	8015-88-1	H2.12
0.1	536-60-7	Cassis bud absolute	Ribes nigrum L.	97676-19-2	F2.1
0.2	536-60-7	Cumin seed oil	Cuminum cyminum L.	8014-13-9	H2.12

This is a non-exhaustive indicative list of typical natural presence for p-Isopropylbenzyl alcohol and is intended to be used in the absence of own analytical data. If analysis has shown that the level of the restricted ingredient in a natural complex substance is different from what is provided in this Annex I, then the analytically determined level should be used in place of the indicative level.
It should further be noted that natural complex substances themselves can be restricted by an IFRA Standard.
For a detailed list of natural contributions, please refer to the Annex I of IFRA Standards, publicly available on the IFRA website (www.ifrafragrance.org).

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

p-Isopropylbenzyl alcohol

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for p-Isopropylbenzyl alcohol, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for p-Isopropylbenzyl alcohol and recommends the limits for the 12 different product categories, which are the acceptable use levels of p-Isopropylbenzyl alcohol in the various product categories.

REFERENCES:

The IFRA Standard on p-Isopropylbenzyl alcohol is based on at least one of the following publications:

• The RIFM Safety Assessment on p-Isopropylbenzyl alcohol if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

p-Isopropylbenzyl alcohol

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Jasmine absolute (grandiflorum)

CAS-No.:	8022-96-6 8024-43-9 90045-94-6 84776-64-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	Not applicable.
Synonyms:	Jasmine absolute (Jasminum grandiflorum L.) Jasminum grandiflorum absolute Jasmin officinale var. grandiflorum		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2008

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.11 %	Category 7A	1.2 %
Category 2	0.032 %	Category 7B	1.2 %
Category 3	0.65 %	Category 8	0.063 %
Category 4	0.60 %	Category 9	1.2 %
Category 5A	0.15 %	Category 10A	4.2 %

Jasmine absolute (grandiflorum)

Category 5B	0.15 %	Category 10B	4.2 %
Category 5C	0.15 %	Category 11A	2.3 %
Category 5D	0.15 %	Category 11B	2.3 %
Category 6	0.35 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Jasmine absolute (grandiflorum)

Additional information is available in the RIFM safety assessment for Jasmine absolute (grandiflorum), which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Jasmine absolute (grandiflorum) and recommends the limits for the 12 different product categories, which are the acceptable use levels of Jasmine absolute (grandiflorum) in the various product categories.

REFERENCES:

The IFRA Standard on Jasmine absolute (grandiflorum) is based on at least one of the following publications:

• The RIFM Safety Assessment on Jasmine absolute (grandiflorum) if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Jasmine absolute (sambac)

CAS-No.:	91770-14-8 1034798-23-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	Not applicable.
Synonyms:	Jasmin sambac extract Jasminum sambac (L.) Aiton		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2008

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.68 %	Category 7A	7.7 %
Category 2	0.20 %	Category 7B	7.7 %
Category 3	4.1 %	Category 8	0.40%
Category 4	3.8 %	Category 9	7.4 %
Category 5A	0.96 %	Category 10A	26 %
Category 5B	0.96 %	Category 10B	26 %

Jasmine absolute (sambac)

Category 5C	0.96 %	Category 11A	15 %
Category 5D	0.96 %	Category 11B	15 %
Category 6	2.2 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Jasmine absolute (sambac), which can be downloaded from the RIFM Safety Assessment Sheet Database:

Jasmine absolute (sambac)

http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Jasmine absolute (sambac) and recommends the limits for the 12 different product categories, which are the acceptable use levels of Jasmine absolute (sambac) in the various product categories.

REFERENCES:

The IFRA Standard on Jasmine absolute (sambac) is based on at least one of the following publications:

• The RIFM Safety Assessment on Jasmine absolute (sambac) if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Lemon oil cold pressed

CAS-No.:	8008-56-8 84929-31-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	Not applicable.
Synonyms:	Not applicable.		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1992 2015

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	2.0 %	Category 7A	No Restriction
Category 2	2.0 %	Category 7B	2.0 %
Category 3	2.0 %	Category 8	2.0 %
Category 4	2.0 %	Category 9	No Restriction
Category 5A	2.0 %	Category 10A	No Restriction
Category 5B	2.0 %	Category 10B	2.0 %

Lemon oil cold pressed

Category 5C	2.0 %	Category 11A	No Restriction
Category 5D	2.0 %	Category 11B	2.0 %
Category 6	2.0 %	Category 12	No Restriction

Fragrance ingredient restriction - Note box

The Standard is set due to the phototoxic effects of Lemon oil cold pressed. For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the Guidance for the use of IFRA Standards.

If the level of furocoumarins is unknown, the restriction level specified in this IFRA Standard applies.

Combination effects of phototoxic ingredients are only taken into consideration for the furocoumarin-containing fragrance ingredients (extracts) listed in the IFRA Standard of Citrus oils and other furocoumarins containing essential oils.

If combinations of furocoumarin-containing phototoxic fragrance ingredients (extracts) are used, the use levels must be reduced accordingly. The sum of the concentrations of all furocoumarin-containing phototoxic fragrance ingredients (extracts), expressed in % of their recommended upper concentration level in the consumer product shall not exceed 100.

For qualities of the expressed oil in which the less volatile components have been concentrated by partial or total removal of the terpene fraction, this limit should be reduced in proportion to the degree of concentration.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Lemon oil cold pressed

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	PHOTOTOXICITY

RIFM SUMMARIES:

These recommendations are based on results of RIFM on the phototoxicity of lemon oil cold pressed (Fd. Cosm. Toxicol. 12,725 (1974), its low bergapten content (C.K. Shu et al. VI Int. Congress of Essential oils 1974) and the observed no-effect level of pooled samples in tests using the animal model.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Lemon oil cold pressed and recommends the limits for the 12 different product categories, which are the acceptable use levels of Lemon oil cold pressed in the various product categories.

REFERENCES:

The IFRA Standard on Lemon oil cold pressed is based on at least one of the following publications:

• Fd. Cosm. Toxicol. 12,725 (1974).

• C.K. Shu et al. VI Int. Congress of Essential oils, 1974.

• IFRA Standard on Citrus oils and other furocoumarins containing essential oils.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Lime oil expressed

CAS-No.:	8008-26-2 90063-52-8 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	Not applicable.
Synonyms:	Not applicable.		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1975 1992 2015

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.70 %	Category 7A	No Restriction
Category 2	0.70 %	Category 7B	0.70 %
Category 3	0.70 %	Category 8	0.70 %
Category 4	0.70 %	Category 9	No Restriction
Category 5A	0.70 %	Category 10A	No Restriction
Category 5B	0.70 %	Category 10B	0.70 %

Lime oil expressed

Category 5C	0.70 %	Category 11A	No Restriction
Category 5D	0.70 %	Category 11B	0.70 %
Category 6	0.70 %	Category 12	No Restriction

Fragrance ingredient restriction - Note box

The Standard is set due to the phototoxic effects of Lime oil expressed. For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the Guidance for the use of IFRA Standards.

If the level of furocoumarins is unknown, the restriction level specified in this IFRA Standard applies.

Combination effects of phototoxic ingredients are only taken into consideration for the furocoumarin-containing fragrance ingredients (extracts) listed in the IFRA Standard of Citrus oils and other furocoumarins containing essential oils.

If combinations of furocoumarin-containing phototoxic fragrance ingredients (extracts) are used, the use levels must be reduced accordingly. The sum of the concentrations of all furocoumarin-containing phototoxic fragrance ingredients (extracts), expressed in % of their recommended upper concentration level in the consumer product shall not exceed 100.

For qualities of the expressed oil in which the less volatile components have been concentrated by partial or total removal of the terpene fraction, this limit should be reduced in proportion to the degree of concentration.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Lime oil expressed

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	PHOTOTOXICITY

RIFM SUMMARIES:

These recommendations are based on results of RIFM on the phototoxicity of Lime oil expressed (Fd. Cosm. Toxicol. 12, 731 (1974), its Bergapten content reported in J.A.O.A.C. 52, (4), 727 (1969) and the observed no-effect level of pooled samples in tests using the animal model.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Lime oil expressed and recommends the limits for the 12 different product categories, which are the acceptable use levels of Lime oil expressed in the various product categories.

REFERENCES:

The IFRA Standard on Lime oil expressed is based on at least one of the following publications:

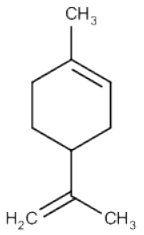
• Fd. Cosm. Toxicol. 12, 731 (1974).

• J.A.O.A.C. 52, (4), 727 (1969).

• IFRA Standard on Citrus oils and other furocoumarins containing essential oils.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Limonene

CAS-No.:	138-86-3 7705-14-8 5989-27-5 5989-54-8 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{10}H_{16}$
		Structure:	
Synonyms:	p-Mentha-1,8-diene 1-methyl-4-prop-1-en-2-ylcyclohexene 1-Methyl-4-(1-methylethenyl)cyclohexene 1-Methyl-4-isopropenyl-1-cyclohexene 4-Isopropenyl-1-methylcyclohexene Cyclohexene, 1-methyl-4-(1-methylethenyl)- Dipentene		

History:	Publication date:	1995 (Amendment 29)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**SPECIFICATION**

FRAGRANCE INGREDIENT SPECIFICATION:	Oxidation products of Limonene, especially hydroperoxides, have been demonstrated to be potent sensitizers. d-, l- and dl-Limonene and natural products containing substantial amounts of it, should only be used when the level of

Limonene

	(hydro)peroxides is kept to the lowest practical level, for instance by adding antioxidants at the time of production. The addition of 0.1% BHT or α-Tocopherol for example has shown great efficiency. Such products should have a peroxide value of less than 20 millimoles per liter, determined according to the IFRA analytical method for the determination of the peroxide value, which can be downloaded from the IFRA website (www.ifrafragrance.org).

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE FRAGRANCE MATERIAL SPECIFICATION**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Limonene. Based on their expert judgement, they recommend to use the fragrance ingredient according to its specification mentioned above.

REFERENCES:

The IFRA Standard on Limonene is based on at least one of the following publications:

• The RIFM Safety Assessment on Limonene if available at the RIFM Safety Assessment Sheet Database:

Limonene

http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

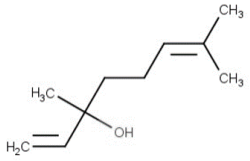
• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• D.L.J. Opdyke, Fd. Cosmet. Toxicol. 13; 825 (1975).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Linalool

CAS-No.:	78-70-6 126-90-9 126-91-0 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{10}H_{18}O$
		Structure:	
Synonyms:	78-70-6 (Linalool): 1,6-Octadien-3-ol, 3,7-dimethyl- 2,6-Dimethyl-2,7-octadien-6-ol 2,7-Octadien-6-ol, 2,6-dimethyl- 3,7-Dimethyl-1,6-octadien-3-ol 3,7-Dimethylocta-1,6-dien-3-ol Coriandrol Licareol Linalyl alcohol 126-90-9 (d-Linalool): (S)-3,7-Dimethyl-1,6-octadien-3-ol 1,6-Octadien-3-ol, 3,7-dimethyl-, (S)- 126-91-0 (l-Linalool): (R)-3,7-Dimethyl-1,6-octadien-3-ol 1,6-Octadien-3-ol, 3,7-dimethyl-, (R)-		

History:	Publication date:	2004 (Amendment 38)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	May 6, 2004
	For existing fragrance compounds*:	May 6, 2005
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**SPECIFICATION**

Linalool

FRAGRANCE INGREDIENT SPECIFICATION:	Oxidation products of Linalool, especially hydroperoxides, have been demonstrated to be potent sensitizers. d-, l- and dl-Linalool and natural products containing substantial amounts of it, should only be used when the level of (hydro)peroxides is kept to the lowest practical level, for instance by adding antioxidants at the time of production. The addition of 0.1% BHT or α-Tocopherol for example has shown great efficiency. Such products should have a peroxide value of less than 20 millimoles per liter, determined according to the IFRA analytical method for the determination of the peroxide value, which can be downloaded from the IFRA website (www.ifrafragrance.org).

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE FRAGRANCE MATERIAL SPECIFICATION**

Natural products known to be rich in Linalool include bois de rose, coriander or ho wood oil.

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

Linalool

The Expert Panel for Fragrance Safety reviewed all the available data for Linalool. Based on their expert judgement, they recommend to use the fragrance ingredient according to its specification mentioned above.

REFERENCES:

The IFRA Standard on Linalool is based on at least one of the following publications:

• The RIFM Safety Assessment on Linalool is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

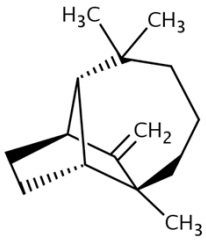
• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• M.Skold, A.Borje, M.Matura and A.-T.Karlberg., 2002. Studies on the autoxidation and sensitizing capacity of the fragrance chemical linalool, identifying a linalool hyperperoxide. Contact Dermatitis, 46(5), 267-272.

• M.Skold, A.Borje, M.Matura and A.-T.Karlberg., 2002. Sensitization studies on the fragrance chemical linalool, with respect to auto-oxidation. Contact Dermatitis, 46 (Suppl. 4), 20.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Longifolene

CAS-No.:	475-20-7 16846-09-6 19067-29-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{15}H_{24}$
		Structure:	
Synonyms:	4,8,8-Trimethyl-9-methylenedecahydro-1,4-methanoazulene 1,4-Methanoazulene, decahydro-4,8,8-trimethyl-9-methylene-) 1,4-Methanoazulene, decahydro-4,8,8-trimethyl-9-methylene-, [1S-(1α,3αβ,4α,8aβ)]- 1,4-Methanoazulene, decahydro-4,8,8-trimethyl-9-methylene-, (1R,3αS,4R,8αR)-		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.27 %	Category 7A	3.1 %
Category 2	0.080 %	Category 7B	3.1 %
Category 3	1.6 %	Category 8	0.16 %
Category 4	1.5 %	Category 9	2.9 %
Category 5A	0.38 %	Category 10A	11 %

Longifolene

Category 5B	0.38 %	Category 10B	11 %
Category 5C	0.38 %	Category 11A	5.8 %
Category 5D	0.38 %	Category 11B	5.8 %
Category 6	0.88 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX I**

ANNEX I

Natural Complex Substances (NCS) containing Longifolene

Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
0.3	475-20-7	Abies alba cone oil	Abies alba Mill.	8021-27-0	H2.12
0.3	475-20-7	Abies alba needle oil	Abies alba Mill.	8021-27-0	E2.12
0.5	475-20-7	Angelica seed oil	Angelica archangelica L.	8015-64-3	H2.12
0.2	475-20-7	Balsam fir oil	Abies balsamea (L.) Mill.	85085-34-3	E2.12
0.6	475-20-7	Cedarwood oil, Atlas	Cedrus atlantica (Endl.) Manetti ex Carriere	8023-85-6	D2.12
0.7	475-20-7	Cedarwood oil, Himalaya	Cedrus deodora (Roxb ex D.Don) G.Don	68991-36-6	D2.12
0.4	475-20-7	Cedarwood oil, Texas	Juniperus mexicana Schiede	68990-83-0	D2.12
0.6	475-20-7	Fir balsam oleoresin	Abies balsamea (L.) Mill.	8024-15-5	K2.16
0.2	475-20-7	Fir needle oil, Canadian	Abies balsamea (L.) Mill.	8024-15-5	E2.12
32	475-20-7	Hinoki leaf oil	Chamaecyparis obtusa (Siebold & Zucc.) Endl.	91745-97-0	E2.12

Longifolene

0.7	475-20-7	Hinoki wood oil	Chamaecyparis obtusa (Siebold & Zucc.) Endl.	91745-97-0	D2.12
0.1	475-20-7	Juniper berry oil	Juniperus communis L.	8002-68-4	G2.12
0.2	475-20-7	Litsea cubeba oil	Litsea Cubeba(Lour.) Pers.	68855-99-2	G2.12
1.8	475-20-7	Nigella sativa oil	Nigella sativa L.	90064-32-7	H2.12
0.15	475-20-7	Pine needle, dwarf, oil	Pinus pumila (Pall.) Regel	8000-26-8	E2.12
0.25	475-20-7	Spruce oil, Black	Picea mariana (Mill.) Britton	8008-80-8	E2.12
0.22	475-20-7	Spruce oil, White	Picea abies (L.) H.Karst.	91770-69-3	E2.12
0.4	475-20-7	Turpentine oil	Pinus spp.	8006-64-2	K2.12
0.4	475-20-7	Turpentine oil rectified	Pinus spp.	8006-64-2	K2.24

This is a non-exhaustive indicative list of typical natural presence for Longifolene and is intended to be used in the absence of own analytical data. If analysis has shown that the level of the restricted ingredient in a natural complex substance is different from what is provided in this Annex I, then the analytically determined level should be used in place of the indicative level.
It should further be noted that natural complex substances themselves can be restricted by an IFRA Standard.
For a detailed list of natural contributions, please refer to the Annex I of IFRA Standards, publicly available on the IFRA website (www.ifrafragrance.org).

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Longifolene, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

Longifolene

The Expert Panel for Fragrance Safety reviewed all the available data for Longifolene and recommends the limits for the 12 different product categories, which are the acceptable use levels of Longifolene in the various product categories.

REFERENCES:

The IFRA Standard on Longifolene is based on at least one of the following publications:

• The RIFM Safety Assessment on Longifolene if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Massoia bark oil

CAS-No.:	85085-26-3 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	Not applicable.
Synonyms:	Cryptocarya massoio oil Cryptocarya massoy bark extract Cryptocarya massoy, ext. Massoia bark oil (Cryptocarya massoio)		

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Massoia bark oil should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Massoia bark oil

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Massoia bark oil and recommends not to use Massoia bark oil as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Massoia bark oil is based on at least one of the following publications:

• The RIFM Safety Assessment on Massoia bark oil if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

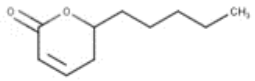
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Massoia lactone

CAS-No.:	54814-64-1 51154-96-2 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{10}H_{16}O_2$
		Structure:	
Synonyms:	2-Decen-1,5-lactone (-)-2-Decenoic acid, 5-hydroxy, δ-lactone (R)-5,6-Dihydro-6-pentyl-2H-pyran-2-one 5,6-Dihydro-6-pentyl-2H-pyran-2-one 5-Hydroxy-2-decenoic acid δ-lactone 2H-Pyran-2-one, 5,6-dihydro-6-pentyl-, (R)- Massoi lactone		

History:	Publication date:	2015 (Amendment 48)	Previous Publications:	2008

Implementation dates:	For new submissions*:	August 10, 2015
	For existing fragrance compounds*:	August 10, 2016
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Massoia lactone should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM**

Massoia lactone

	OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Massoia lactone and recommends not to use Massoia lactone as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Massoia lactone is based on at least one of the following publications:

• The RIFM Safety Assessment on Massoia lactone if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Melissa oil (genuine Melissa officinalis L.)

CAS-No.:	8014-71-9 84082-61-1 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	Not applicable.
Synonyms:	Balm oil (Melissa officinalis L.) Lemon balm oil Melissa officinalis leaf oil Melissa oil (Melissa officinalis L.) Oil of balm		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2008 2009

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.11 %	Category 7A	1.2 %
Category 2	0.032 %	Category 7B	1.2 %
Category 3	0.65 %	Category 8	0.063 %
Category 4	0.60 %	Category 9	1.2 %
Category 5A	0.15 %	Category 10A	4.2 %

Melissa oil (genuine Melissa officinalis L.)

Category 5B	0.15 %	Category 10B	4.2 %
Category 5C	0.15 %	Category 11A	2.3 %
Category 5D	0.15 %	Category 11B	2.3 %
Category 6	0.35 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Melissa oil (genuine Melissa officinalis L.)

Additional information is available in the RIFM safety assessment for Melissa oil (genuine Melissa officinalis L.), which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Melissa oil (genuine Melissa officinalis L.) and recommends the limits for the 12 different product categories, which are the acceptable use levels of Melissa oil (genuine Melissa officinalis L.) in the various product categories.

REFERENCES:

The IFRA Standard on Melissa oil (genuine Melissa officinalis L.) is based on at least one of the following publications:

• The RIFM Safety Assessment on Melissa oil (genuine Melissa officinalis L.) if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

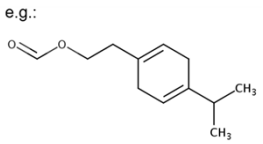
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Menthadiene-7-methyl formate

CAS-No.:	68683-20-5 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{12}H_{18}O_2$
		Structure:	e.g.: 
Synonyms:	Cyclohexadiene-1-ethanol, 4-(1-methylethyl)-, formate Isobergamate 4-(Isopropyl)cyclohexadiene-1-ethyl formate 2-(4-Isopropylcyclohexadienyl)ethyl formate Menthadienyl formate 4-(1-Methylethyl)cyclohexadiene-1-ethyl formate		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1986 1994 2008

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.077 %	Category 7A	0.88 %
Category 2	0.023 %	Category 7B	0.88 %
Category 3	0.46 %	Category 8	0.045 %
Category 4	0.43 %	Category 9	0.84 %
Category 5A	0.11 %	Category 10A	3.0 %

Menthadiene-7-methyl formate

Category 5B	0.11 %	Category 10B	3.0 %
Category 5C	0.11 %	Category 11A	1.7 %
Category 5D	0.11 %	Category 11B	1.7 %
Category 6	0.25 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Menthadiene-7-methyl formate

Additional information is available in the RIFM safety assessment for Menthadiene-7-methyl formate, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Menthadiene-7-methyl formate and recommends the limits for the 12 different product categories, which are the acceptable use levels of Menthadiene-7-methyl formate in the various product categories.

REFERENCES:

The IFRA Standard on Menthadiene-7-methyl formate is based on at least one of the following publications:

• The RIFM Safety Assessment on Menthadiene-7-methyl formate if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

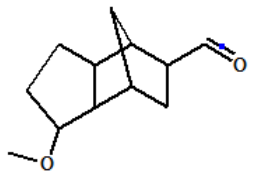
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Methoxy dicyclopentadiene carboxaldehyde

CAS-No.:	86803-90-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{12}H_{18}O_2$
		Structure:	
Synonyms:	4,7-Methano-1H-indene-2-carboxaldehyde, octahydro-5-methoxy 8-Methoxytricyclo[5.2.2.1]decane-4-carboxaldehyde Scentenal (commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1998 2007 2008

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.19 %	Category 7A	2.2 %
Category 2	0.057 %	Category 7B	2.2 %
Category 3	1.2 %	Category 8	0.091 %
Category 4	1.1 %	Category 9	2.1 %
Category 5A	0.27 %	Category 10A	2.1 %
Category 5B	0.27 %	Category 10B	7.5 %

Methoxy dicyclopentadiene carboxaldehyde

Category 5C	0.27 %	Category 11A	0.091 %
Category 5D	0.091 %	Category 11B	0.091 %
Category 6	0.63 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Methoxy dicyclopentadiene carboxaldehyde, which can be downloaded from the RIFM Safety Assessment Sheet Database:

Methoxy dicyclopentadiene carboxaldehyde

http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Methoxy dicyclopentadiene carboxaldehyde and recommends the limits for the 12 different product categories, which are the acceptable use levels of Methoxy dicyclopentadiene carboxaldehyde in the various product categories.

REFERENCES:

The IFRA Standard on Methoxy dicyclopentadiene carboxaldehyde is based on at least one of the following publications:

• The RIFM Safety Assessment on Methoxy dicyclopentadiene carboxaldehyde if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

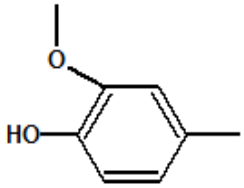
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

2-Methoxy-4-methylphenol

CAS-No.:	93-51-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_8H_{10}O_2$
		Structure:	
Synonyms:	Creosol p-Creosol p-Cresol, 2-methoxy- Homoguaiacol 1-Hydroxy-2-methoxy-4-methylbenzene 4-Hydroxy-3-methoxytoluene 2-Methoxy-p-cresol 3-Methoxy-4-hydroxytoluene 4-Methylguaiacol p-Methylguaiacol 4-Methyl-2-methoxyphenol Phenol, 2-methoxy-4-methyl- Valspice (commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1999 2005 2007 2008

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.0085 %	Category 7A	0.096 %
Category 2	0.0025 %	Category 7B	0.096 %

2-Methoxy-4-methylphenol

Category 3	0.051 %	Category 8	0.0050 %
Category 4	0.047 %	Category 9	0.092 %
Category 5A	0.012 %	Category 10A	0.33 %
Category 5B	0.012 %	Category 10B	0.33 %
Category 5C	0.012 %	Category 11A	0.18 %
Category 5D	0.012 %	Category 11B	0.18 %
Category 6	0.028 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be

2-Methoxy-4-methylphenol

one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 2-Methoxy-4-methylphenol, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 2-Methoxy-4-methylphenol and recommends the limits for the 12 different product categories, which are the acceptable use levels of 2-Methoxy-4-methylphenol in the various product categories.

REFERENCES:

The IFRA Standard on 2-Methoxy-4-methylphenol is based on at least one of the following publications:

• The RIFM Safety Assessment on 2-Methoxy-4-methylphenol if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

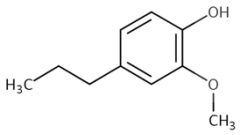
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

2-Methoxy-4-propylphenol

CAS-No.:	2785-87-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{10}H_{14}O_2$
		Structure:	
Synonyms:	Phenol, 2-methoxy-4-propyl- 4-Propyl-ortho-methoxyphenol 4-Propylguaicol 5-Propyl-ortho-hydroxyanisole Dihydroeugenol		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.13 %	Category 7A	1.5 %
Category 2	0.039 %	Category 7B	1.5 %
Category 3	0.78 %	Category 8	0.062 %
Category 4	0.73 %	Category 9	1.4 %
Category 5A	0.19 %	Category 10A	1.4 %

2-Methoxy-4-propylphenol

Category 5B	0.19 %	Category 10B	5.1 %
Category 5C	0.19 %	Category 11A	0.062 %
Category 5D	0.062 %	Category 11B	0.062 %
Category 6	0.43 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX I**

ANNEX I

Natural Complex Substances (NCS) containing 2-Methoxy-4-propylphenol

Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
0.9	2785-87-7	Birch tar oil, rectified	Betula spp.	8001-88-5	C2.9.2
0.5	2785-87-7	Cade oil, rectified	Juniperus oxycedrus L.	8013-10-3	D2.9.2

This is a non-exhaustive indicative list of typical natural presence for 2-Methoxy-4-propylphenol and is intended to be used in the absence of own analytical data. If analysis has shown that the level of the restricted ingredient in a natural complex substance is different from what is provided in this Annex I, then the analytically determined level should be used in place of the indicative level.
It should further be noted that natural complex substances themselves can be restricted by an IFRA Standard.
For a detailed list of natural contributions, please refer to the Annex I of IFRA Standards, publicly available on the IFRA website (www.ifrafragrance.org).

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

2-Methoxy-4-propylphenol

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 2-Methoxy-4-propylphenol, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 2-Methoxy-4-propylphenol and recommends the limits for the 12 different product categories, which are the acceptable use levels of 2-Methoxy-4-propylphenol in the various product categories.

REFERENCES:

The IFRA Standard on 2-Methoxy-4-propylphenol is based on at least one of the following publications:

• The RIFM Safety Assessment on 2-Methoxy-4-propylphenol if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

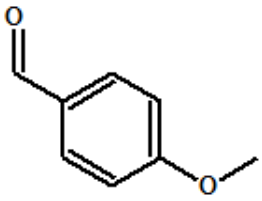
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

p-Methoxybenzaldehyde

CAS-No.:	123-11-5 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_8H_8O_2$
		Structure:	
Synonyms:	Anisaldehyde p-Anisaldehyde Anisic aldehyde Benzaldehyde, 4-methoxy 4-Methoxybenzaldehyde Aubepine P Cresol (commercial name) Aubepine liquid (commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2013

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.043 %	Category 7A	0.022 %
Category 2	0.080 %	Category 7B	0.022 %
Category 3	0.022 %	Category 8	0.0072 %
Category 4	0.21 %	Category 9	0.065 %
Category 5A	0.11 %	Category 10A	0.065 %

p-Methoxybenzaldehyde

Category 5B	0.022 %	Category 10B	0.21 %
Category 5C	0.032 %	Category 11A	0.0072 %
Category 5D	0.0072 %	Category 11B	0.0072 %
Category 6	0.011 %	Category 12	4.9 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX I**

ANNEX I

Natural Complex Substances (NCS) containing p-Methoxybenzaldehyde

Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
1	123-11-5	Anise seed oil	Pimpinella anisum L.	8007-70-3	H2.12
0.1	123-11-5	Basil oil, chemotype estragole	Ocimum basilicum L.	8015-73-4	E2.12
1	123-11-5	Cassie absolute	Vachellia farnesiana (L.) Willd.	8023-82-3	F2.1
0.4	123-11-5	Cassie extract	Vachellia farnesiana (L.) Willd.	8023-82-3	F2.13
0.2	123-11-5	Fennel oil, bitter, phellandrene type	Foeniculum vulgare Mill.	84625-39-8	H2.12
0.3	123-11-5	Fennel oil, bitter,anethole type	Foeniculum vulgare Mill.	8006-84-6	H2.12
1	123-11-5	Fennel oil, sweet	Foeniculum vulgare subsp. vulgare var. Dulce (Mill) Batt.	8006-84-6	H2.12
0.1	123-11-5	Heath	Erica arborea L.	68916-48-3	A2.13

p-Methoxybenzaldehyde

		extract			
0.015	123-11-5	Mimosa absolute	Acacia decurrens (Wendl.f.) Willd.	8031-03-6	F2.1
0.2	123-11-5	Star anise oil	Illicium verum Hook, f.	68952-43-2	H2.12
0.3	123-11-5	Vanilla absolute	Vanilla spp.	8024-06-4	G2.1
0.04	123-11-5	Vanilla oleoresin	Vanilla spp.	8024-06-4	G2.21
0.04	123-11-5	Vanilla tahitensis extract	Vanilla tahitensis J.W. Moore	953789-39-4	G2.13

This is a non-exhaustive indicative list of typical natural presence for p-Methoxybenzaldehyde and is intended to be used in the absence of own analytical data. If analysis has shown that the level of the restricted ingredient in a natural complex substance is different from what is provided in this Annex I, then the analytically determined level should be used in place of the indicative level.
It should further be noted that natural complex substances themselves can be restricted by an IFRA Standard.
For a detailed list of natural contributions, please refer to the Annex I of IFRA Standards, publicly available on the IFRA website (www.ifrafragrance.org).

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT: DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for p-Methoxybenzaldehyde, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for p-Methoxybenzaldehyde and recommends the limits for the 12 different product categories, which are the acceptable use levels of p-Methoxybenzaldehyde in the various product categories.

REFERENCES:

The IFRA Standard on p-Methoxybenzaldehyde is based on at least one of the following publications:

p-Methoxybenzaldehyde

• The RIFM Safety Assessment on p-Methoxybenzaldehyde if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

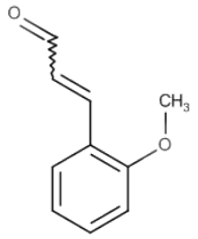
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

o-Methoxycinnamaldehyde

CAS-No.:	1504-74-1 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{10}H_{10}O_2$
		Structure:	
Synonyms:	2'-Methoxycinnamaldehyde ortho-Methoxycinnamic aldehyde β-(o-Methoxyphenyl)acrolein 3-(2-Methoxyphenyl)acrylaldehyde 3-(o-Methoxyphenyl)-2-propenal 2-Propenal, 3-(2-methoxyphenyl)-		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2011

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.077 %	Category 7A	0.88 %
Category 2	0.023 %	Category 7B	0.88 %
Category 3	0.46 %	Category 8	0.045 %
Category 4	0.43 %	Category 9	0.84 %

o-Methoxycinnamaldehyde

Category 5A	0.11 %	Category 10A	3.0 %
Category 5B	0.11 %	Category 10B	3.0 %
Category 5C	0.11 %	Category 11A	1.7 %
Category 5D	0.11 %	Category 11B	1.7 %
Category 6	0.25 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX I**

ANNEX I

Natural Complex Substances (NCS) containing o-Methoxycinnamaldehyde

Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
2	1504-74-1	Cassia bark extract	Cinnamomum cassia Blume	8007-80-5	C2.13
9	1504-74-1	Cassia oil	Cinnamomum aromaticum Nees	8007-80-5	E2.12
0.5	1504-74-1	Cinnamon bark oil	Cinnamomum zeylanicum Blume	8015-91-6	C2.12

This is a non-exhaustive indicative list of typical natural presence for o-Methoxycinnamaldehyde and is intended to be used in the absence of own analytical data. If analysis has shown that the level of the restricted ingredient in a natural complex substance is different from what is provided in this Annex I, then the analytically determined level should be used in place of the indicative level.
It should further be noted that natural complex substances themselves can be restricted by an IFRA Standard.
For a detailed list of natural contributions, please refer to the Annex I of IFRA Standards, publicly available on the IFRA website (www.ifrafragrance.org).

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

o-Methoxycinnamaldehyde

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for o-Methoxycinnamaldehyde, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for o-Methoxycinnamaldehyde and recommends the limits for the 12 different product categories, which are the acceptable use levels of o-Methoxycinnamaldehyde in the various product categories.

REFERENCES:

The IFRA Standard on o-Methoxycinnamaldehyde is based on at least one of the following publications:

• The RIFM Safety Assessment on o-Methoxycinnamaldehyde if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

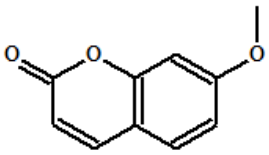
• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

o-Methoxycinnamaldehyde

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

7-Methoxycoumarin

CAS-No.:	531-59-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{10}H_8O_3$
		Structure:	
Synonyms:	2H-1-Benzopyran-2-one, 7-methoxy- Herniarin		

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	1979 1989

Implementation dates:	For new submissions*:	August 16, 2008
	For existing fragrance compounds*:	August 16, 2009
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION / RESTRICTION**

FRAGRANCE INGREDIENT PROHIBITION:	7-Methoxycoumarin as such should not be used as fragrance ingredient. The natural extracts containing 7-Methoxycoumarin should not be used as substitutes for this substance.

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	See notebox	Category 7A	See notebox
Category 2	See notebox	Category 7B	See notebox
Category 3	See notebox	Category 8	See notebox

7-Methoxycoumarin

Category 4	See notebox	Category 9	See notebox
Category 5A	See notebox	Category 10A	See notebox
Category 5B	See notebox	Category 10B	See notebox
Category 5C	See notebox	Category 11A	See notebox
Category 5D	See notebox	Category 11B	See notebox
Category 6	See notebox	Category 12	See notebox

Fragrance ingredient restriction - Note box

On the basis of established maximum concentration levels of this substance in commercially available natural sources (like essential oils, extracts and absolutes), exposure to this substance from the use of these oils and extracts is regarded acceptable as long as the level of 7-Methoxy-coumarin in the finished product does not exceed 0.01% (100 ppm).

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX I**

ANNEX I

Natural Complex Substances (NCS) containing 7-Methoxycoumarin

Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
0.01	531-59-9	Bergamot oil, expressed	Citrus bergamia (Risso) Wright & Arn.	8007-75-8	G2.5
0.01	531-59-9	Lavandin abrialis oil	Lavandula x intermedia abrialis	8022-15-9	F2.12
2	531-59-9	Lavandin absolute	Lavandula officinalis x Lavandula latifolia	8022-15-9	F2.1
5	531-59-9	Lavandin concrete	Lavandula officinalis x Lavandula latifolia	8022-15-9	F2.7
0.01	531-59-9	Lavandin oil	Lavandula	8022-15-9	F2.12

7-Methoxycoumarin

			officinalis x Lavandula latifolia		
5	531-59-9	Lavender absolute	Lavandula angustifolia angustifolia	8000-28-0	F2.1
8	531-59-9	Lavender concrete	Lavandula angustifolia angustifolia	8000-28-0	F2.7
0.01	531-59-9	Lavender oil	Lavandula angustifolia angustifolia	8000-28-0	F2.12
0.05	531-59-9	Lemon oil, expressed	Citrus limon (L.) Burm. f.	8008-56-8	G2.5
0.1	531-59-9	Lime oil, expressed	Citrus aurantifolia (Christman) Swingle	8008-26-2	G2.5
0.07	531-59-9	Tarragon oil	Artemisia dracunculus L.	8016-88-4	E2.12

This is a non-exhaustive indicative list of typical natural presence for 7-Methoxycoumarin and is intended to be used in the absence of own analytical data. If analysis has shown that the level of the restricted ingredient in a natural complex substance is different from what is provided in this Annex I, then the analytically determined level should be used in place of the indicative level.
It should further be noted that natural complex substances themselves can be restricted by an IFRA Standard.
For a detailed list of natural contributions, please refer to the Annex I of IFRA Standards, publicly available on the IFRA website (www.ifrafragrance.org).

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION, PHOTOSENSITIZATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 7-Methoxycoumarin and recommends not to use 7-Methoxycoumarin as or in fragrance ingredients in any finished product application.
However, the presence of 7-Methoxycoumarin in natural extracts used as ingredients in finished consumer products is tolerated only according to the upper concentration level mentioned in the Notebox if the natural extracts are not being used to provide an alternative, indirect source of the banned substance.

REFERENCES:

The IFRA Standard on 7-Methoxycoumarin is based on at least one of the following publications:

• The RIFM Safety Assessment on 7-Methoxycoumarin if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D.,

7-Methoxycoumarin

Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014) (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

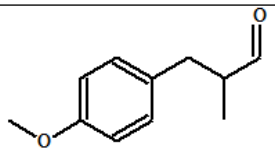
• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• R.A. Ford et al. (1988), Fd. Chem. Toxic. 26, 375.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

4-Methoxy-α-methylbenzenepropanal

CAS-No.:	5462-06-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{11}H_{14}O_2$
		Structure:	
Synonyms:	2-Anisylpropional Benzenepropanal, 4-methoxy-α-methyl- Hydrocinnamaldehyde, p-methoxy-a-methyl p-Methoxyhydratropaldehyde 4-Methoxy-α-methylbenzenepropanal p-Methoxy-α-methylhydrocinnamaldehyde 3-(4-Methoxyphenyl)-2-methylpropanal 3-(p-Methoxyphenyl)-2-methylpropionaldehyde 2-Methyl-3-(p-methoxyphenyl)propanal 2-Methyl-3-(4-methoxyphenyl)propionaldehyde Canthoxal (commercial name) Fennaldehyde (commercial name) Foliaver (commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2009 2013

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.034 %	Category 7A	0.023 %
Category 2	0.11 %	Category 7B	0.023 %

4-Methoxy-α-methylbenzenepropanal

Category 3	0.011 %	Category 8	0.0056 %
Category 4	0.82 %	Category 9	0.054 %
Category 5A	0.12 %	Category 10A	0.054 %
Category 5B	0.017 %	Category 10B	0.12 %
Category 5C	0.020 %	Category 11A	0.0056 %
Category 5D	0.0056 %	Category 11B	0.0056 %
Category 6	0.0028 %	Category 12	4.5 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX II**

ANNEX II

4-Methoxy-α-methylbenzenepropanal	CAS number (Aldehyde)	Schiff base	CAS number (Schiff base)	Level of restricted aldehyde in the Schiff base (%)
4-Methoxy-α-methylbenzeneproponal (Canthoxal, Fennaldehyde)	5462-06-6	Canthoxal-methyl anthranilate (or Canthalide, Anthranolene)	111753-62-9	57.3

INTRINSIC PROPERTY DRIVING RISK	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

4-Methoxy-α-methylbenzenepropanal

MANAGEMENT:

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 4-Methoxy-α-methylbenzenepropanal, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 4-Methoxy-α-methylbenzenepropanal and recommends the limits for the 12 different product categories, which are the acceptable use levels of 4-Methoxy-α-methylbenzenepropanal in the various product categories.

REFERENCES:

The IFRA Standard on 4-Methoxy-α-methylbenzenepropanal is based on at least one of the following publications:

• The RIFM Safety Assessment on 4-Methoxy-α-methylbenzenepropanal if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

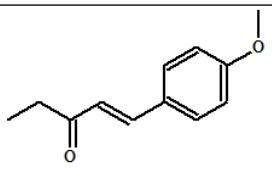
• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

4-Methoxy-α-methylbenzenepropanal

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

α-Methyl anisylidene acetone

CAS-No.:	104-27-8 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{12}H_{14}O_2$
		Structure:	
Synonyms:	1-(p-Methoxyphenyl)-1-penten-3-one p-Methoxystyryl ethyl ketone alpha-Methylanisalacetone α-Methylanisalacetone 1-(4-Methoxyphenyl)-1-penten-3-one 1-Penten-3-one, 1-(4-(methoxyphenyl))- Ethone (commercial name)		

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1977 1980 2002

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	α-Methyl anisylidene acetone should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE**

α-Methyl anisylidene acetone

	GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for α-Methyl anisylidene acetone and recommends not to use α-Methyl anisylidene acetone as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on α-Methyl anisylidene acetone is based on at least one of the following publications:

• The RIFM Safety Assessment on α-Methyl anisylidene acetone is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

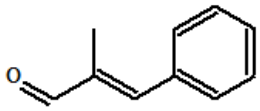
• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Opdyke, D.L.J. (1979), Food and Chemical Toxicology 17, 863.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

α-Methyl cinnamic aldehyde

CAS-No.:	101-39-3 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{10}H_{10}O$
		Structure:	
Synonyms:	α-Methylcinnamaldehyde α-Methylcinnamyl aldehyde α-Methylcinnamic aldehyde 2-Methyl-3-phenyl-2-propenal 3-Phenyl-2-methylacrolein 2-Propenyl, 2-methyl-3-phenyl-		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2007

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.27 %	Category 7A	3.1 %
Category 2	0.080 %	Category 7B	3.1 %
Category 3	1.6 %	Category 8	0.16 %
Category 4	1.5 %	Category 9	2.9 %
Category 5A	0.38 %	Category 10A	11 %

α-Methyl cinnamic aldehyde

Category 5B	0.38 %	Category 10B	11 %
Category 5C	0.38 %	Category 11A	5.8 %
Category 5D	0.38 %	Category 11B	5.8 %
Category 6	0.88 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

α-Methyl cinnamic aldehyde

Additional information is available in the RIFM safety assessment for α-Methyl cinnamic aldehyde, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for α-Methyl cinnamic aldehyde and recommends the limits for the 12 different product categories, which are the acceptable use levels of α-Methyl cinnamic aldehyde in the various product categories.

REFERENCES:

The IFRA Standard on α-Methyl cinnamic aldehyde is based on at least one of the following publications:

• The RIFM Safety Assessment on α-Methyl cinnamic aldehyde if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

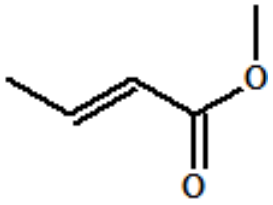
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Methyl crotonate

CAS-No.:	623-43-8 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_5H_8O_2$
		Structure:	
Synonyms:	2-Butenoic acid, methyl ester, (E)- Methyl trans-2-butenoate		

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1978 1980 2002

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Methyl crotonate should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Methyl crotonate

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Methyl crotonate and recommends not to use Methyl crotonate as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Methyl crotonate is based on at least one of the following publications:

• The RIFM Safety Assessment on Methyl crotonate is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

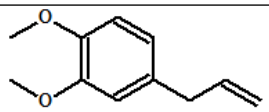
• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Opdyke, D.L.J. (1979), Food and Cosmetics Toxicology 17, 865.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Methyl eugenol

CAS-No.:	93-15-2 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{11}H_{14}O_2$
		Structure:	
Synonyms:	Eugenyl methyl ether Methyl eugenol ether Allylveratrole Veratrole methyl ether 4-Allyl-1,2-dimethoxybenzene Benzene, 1,2-dimethoxy-4-(2-propenyl)- 1,2-Dimethoxy-4-allylbenzene 1,2-dimethoxy-4-(2-propenyl)- benzene		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2002 2015

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.00058 %	Category 7A	0.00058 %
Category 2	0.0023 %	Category 7B	0.00058 %
Category 3	0.00029 %	Category 8	0.00019 %
Category 4	0.016 %	Category 9	0.00087 %

Methyl eugenol

Category 5A	0.0020 %	Category 10A	0.00087 %
Category 5B	0.00058 %	Category 10B	0.0032 %
Category 5C	0.00058 %	Category 11A	0.00019 %
Category 5D	0.00019 %	Category 11B	0.00019 %
Category 6	0.0014 %	Category 12	0.097 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX I**

ANNEX I

Natural Complex Substances (NCS) containing Methyl eugenol

Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
8.5	93-15-2	Allspice oil	Pimenta officinalis Lindl.	8006-77-7	G2.12
5.1	93-15-2	Allspice oleoresin	Pimenta officinalis Lindl.	8006-77-7	G2.21
0.07	93-15-2	Artemisia arborescens extract	Artemisia arborescens L.	92113-09-2	E2.13
0.5	93-15-2	Basil oil, chemotype estragole	Ocimum basilicum L.	8015-73-4	E2.12
0.2	93-15-2	Basil oil, chemotype linalool	Ocimum basilicum L.	8015-73-4	E2.12
0.2	93-15-2	Basil oleoresin, chemotype estragole	Ocimum basilicum L.	8015-73-4	E2.21
2.4	93-15-2	Bay leaf oil, terpeneless	Pimenta acris Kostel	68916-05-2	E2.29
1.4	93-15-2	Bay leaf,	Pimenta acris	8006-78-8	E2.13

Methyl eugenol

		West Indian, extract	Kostel		
2	93-15-2	Bay leaf, West Indian, oil	Pimenta racemosa (Mill.) J.W. Moore	8006-78-8	E2.12
0.3	93-15-2	Calamus oil	Acorus calamus L.	8015-79-0	A2.12
0.2	93-15-2	Cananga oil	Cananga odorata (Lam.) Hook. f. & Thomson (forma macrophylla Steenis)	68606-83-7	F2.12
0.01	93-15-2	Cinnamon leaf oil	Cinnamomum zeylanicum Blume	8015-91-6	E2.12
0.07	93-15-2	Elemi gum	Canarium luzonicum (Blume) A. Gray	8023-89-0	K2.16
0.4	93-15-2	Elemi oil	Canarium luzonicum (Blume) A. Gray	8023-89-0	K2.12
0.07	93-15-2	Elemi resinoid	Canarium luzonicum (Blume) A. Gray	8023-89-0	K2.26
1.5	93-15-2	Hyacinth absolute	Hyacinthus orientalis L.	8023-94-7	F2.1
0.2	93-15-2	Hyssop oil	Hyssopus officinalis L.	8006-83-5	E2.12
3	93-15-2	Laurel leaf oil	Laurus nobilis L	8007-48-5	E2.12
1.2	93-15-2	Mace oil	Myristica fragrans Houtt.	8007-12-3	G2.12
0.01	93-15-2	Mastic absolute	Pistacia lentiscus L.	68991-39-9	K2.1
0.02	93-15-2	Mastic oil	Pistacia lentiscus L.	68991-39-9	K2.12
2.8	93-15-2	Michelia alba extract	Michelia x alba DC. (champaca x montana)	8006-76-6	F2.13
1	93-15-2	Myrtle oil	Myrtus communis L.	8008-46-6	E2.12
1.2	93-15-2	Nutmeg oil	Myristica fragrans Houtt.	8008-45-5	H2.12
6	93-15-2	Pimenta leaf oil	Pimenta officinalis Lindl.	8006-77-7	E2.12
0.5	93-15-2	Rose absolute	Rosa x damascena Mill.	90106-38-0	F2.1
0.5	93-15-2	Rose concrete	Rosa x damascena Mill.	90106-38-0	F2.7
2	93-15-2	Rose oil	Rosa x damascena Mill.	8007-01-0	F2.12
0.04	93-15-2	Rose water stronger	Rosa x centifolia L.	8007-01-0	F2.54
40	93-15-2	Snakeroot oil	Asarum canadense L.	8016-69-1	A2.12
0.3	93-15-2	Tarragon oil	Artemisia dracunculus L.	8016-88-4	E2.12
0.05	93-15-2	Tea tree oil	Melaleuca alternifolia (Maiden & Betche) Cheel	68647-73-4	E2.12

Methyl eugenol

0.02	93-15-2	Thyme absolute	Thymus vulgaris L.	8007-46-3	E2.1
0.03	93-15-2	Thyme oil, red	Thymus vulgaris L.	8007-46-3	E2.12
0.03	93-15-2	Thyme oil, white	Thymus vulgaris L.	8007-46-3	E2.12
1.8	93-15-2	Tuberose absolute	Poliantes tuberosa L.	8024-05-3	F2.1
1.07	93-15-2	Tuberose concrete	Poliantes tuberosa L.	8024-05-3	F2.7
0.1	93-15-2	Verbena absolute	Lippia citriodora (L.) Kunth	8024-12-2	E2.1

This is a non-exhaustive indicative list of typical natural presence for Methyl eugenol and is intended to be used in the absence of own analytical data. If analysis has shown that the level of the restricted ingredient in a natural complex substance is different from what is provided in this Annex I, then the analytically determined level should be used in place of the indicative level.
It should further be noted that natural complex substances themselves can be restricted by an IFRA Standard.
For a detailed list of natural contributions, please refer to the Annex I of IFRA Standards, publicly available on the IFRA website (www.ifrafragrance.org).

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Methyl eugenol, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Methyl eugenol and recommends the limits for the 12 different product categories, which are the acceptable use levels of Methyl eugenol in the various product categories.

REFERENCES:

The IFRA Standard on Methyl eugenol is based on at least one of the following publications:

Methyl eugenol

• The RIFM Safety Assessment on Methyl eugenol if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

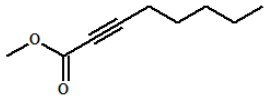
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Methyl heptine carbonate

CAS-No.:	111-12-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_9H_{14}O_2$
		Structure:	
Synonyms:	Methyl heptyne carbonate Methyl 2-octynoate Methyl oct-2-ynoate MHC 2-Octynoic acid, methyl ester Folione (commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1976 2000 2005

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.0085 %	Category 7A	0.096 %
Category 2	0.0025 %	Category 7B	0.096 %
Category 3	0.051 %	Category 8	0.0050 %
Category 4	0.047 %	Category 9	0.092 %
Category 5A	0.012 %	Category 10A	0.33 %

Methyl heptine carbonate

Category 5B	0.012 %	Category 10B	0.33 %
Category 5C	0.012 %	Category 11A	0.18 %
Category 5D	0.012 %	Category 11B	0.18 %
Category 6	0.028 %	Category 12	No Restriction

Fragrance ingredient restriction - Note box

When used in the same fragrance compound within a specific QRA category, the sum total of Methyl heptine carbonate (MHC, CAS number 111-12-6) and Methyl octine carbonate (MOC, CAS number 111-80-8) contributions must not exceed the maximum permitted level for MHC. At the same time, the contribution from MOC should always respect the maximum levels permitted in the respective categories as listed in the Standard for MOC.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be

Methyl heptine carbonate

one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Methyl heptine carbonate, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Methyl heptine carbonate and recommends the limits for the 12 different product categories, which are the acceptable use levels of Methyl heptine carbonate in the various product categories.

REFERENCES:

The IFRA Standard on Methyl heptine carbonate is based on at least one of the following publications:

• The RIFM Safety Assessment on Methyl heptine carbonate if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Methyl ionone, mixed isomers

CAS-No.:	1335-46-2 127-42-4 127-43-5 127-51-5 7779-30-8 79-89-0 1335-94-0 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.	**Molecular formula:**	$C_{14}H_{22}O$
Synonyms:	1335-46-2: Methyl ionone, mixture of isomers 127-42-4: Methyl-α-ionone α-Cetone α-Cyclocitrylidenebutanone α-Cyclocitrylidenemethyl ethyl ketone Methyl-α-ionone α-Methylionone 1-Penten-3-one, 1-(2,6,6-trimethyl-2-cyclohexen-1-yl)-, [R-(E)]- (R-(E))-1-(2,6,6-Trimethyl-2-cyclohexen-1-yl)pent-1-en-3-one 127-43-5: Methyl-beta-ionone Methyl-ß-ionone β-Methylionone β-Cetone β-Cyclocitrylidenebutanone β-Iraldeine 1-Penten-3-one, 1-(2,6,6-trimethyl-1-cyclohexen-1-yl)- 5-(2,6,6-Trimethyl-1-cyclohexen-1-yl)-4-penten-3-one 1-(2,6,6-Trimethyl-1-cyclohexen-1-yl)pent -1-en-3-one 127-51-5: α-Isomethylionone 3-Buten-2-one, 3-methyl-4-(2,6,6-trimethyl-2-cyclohexen-1-yl)- 3-Methyl-4-(2,6,6-trimethyl-2-cyclohexen-1-yl)-3-buten-2-one α-Isomethyl ionone Iraldeine gamma Isoraldeine 95 (commercial name) 7779-30-8:		

Methyl ionone, mixed isomers

	1-(2,6,6-Trimethyl-2-cyclohexen-1-yl)pent-1-en-3-one 1-Penten-3-one, 1-(2,6,6-trimethyl-2-cyclohexen-1-yl)- 79-89-0: iso-Methyl-β-ionone 3-Buten-2-one, 3-methyl-4-(2,6,6-trimethyl-1-cyclohexen-1-yl)- 3-Methyl-4-(2,6,6-trimethylcyclohex-1-en-1-yl)but-3-en-2-one δ-Iraldeine 1335-94-0: Irone

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2007 2015

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION / SPECIFICATION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	5.4 %	Category 7A	61 %
Category 2	1.6 %	Category 7B	61 %
Category 3	32 %	Category 8	3.2 %
Category 4	30 %	Category 9	59 %
Category 5A	7.6 %	Category 10A	100 %
Category 5B	7.6 %	Category 10B	100 %
Category 5C	7.6 %	Category 11A	100 %
Category 5D	7.6 %	Category 11B	100 %

Methyl ionone, mixed isomers

Category 6	18 %	Category 12	No Restriction

Fragrance ingredient restriction - Note box

The above limits apply to Methyl ionone isomers used individually or in combination.

FRAGRANCE INGREDIENT SPECIFICATION:	Pseudo methyl ionones (CAS numbers 26651-96-7, 72968-25-3, 1117-41-5) should not be used as fragrance ingredient as such. A level of up to 2% of Pseudo methyl ionones as an impurity in Methyl ionones is accepted.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to

Methyl ionone, mixed isomers

the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Methyl ionone, mixed isomers, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Methyl ionone, mixed isomers and recommends the limits for the 12 different product categories, which are the acceptable use levels of Methyl ionone, mixed isomers in the various product categories.
In addition, they recommend to use Methyl ionone, mixed isomers according to the specification above mentioned.

REFERENCES:

The IFRA Standard on Methyl ionone, mixed isomers is based on at least one of the following publications:

• The RIFM Safety Assessment on Methyl ionone, mixed isomers if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

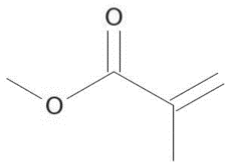
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Methyl methacrylate

CAS-No.:	80-62-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_5H_8O_2$
		Structure:	
Synonyms:	Methyl 2-methacrylate, 2-(methoxycarbonyl)-1-propene Methyl 2-methyl-2-propenoate 2-Propenoic acid, 2-methyl-, methyl ester MMA		

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Methyl methacrylate should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA**

Methyl methacrylate

	STANDARDS)

Methyl methacrylate has been found in natural extracts but only at trace levels.

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Methyl methacrylate and recommends not to use Methyl methacrylate as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Methyl methacrylate is based on at least one of the following publications:

• The RIFM Safety Assessment on Methyl methacrylate if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

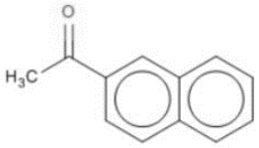
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Methyl β-naphthyl ketone

CAS-No.:	93-08-3 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{12}H_{10}O$
		Structure:	
Synonyms:	2-Acetonaphthone β-Acetylnaphthalene Cetone d Ethanone, 1-(2-naphthalenyl) β-Methyl naphthyl ketone β-Naphthyl methyl ketone Oranger crystals		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2004 2015

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.20 %	Category 7A	No Restriction
Category 2	0.20 %	Category 7B	0.20 %
Category 3	0.20 %	Category 8	0.20 %
Category 4	0.20 %	Category 9	No Restriction
Category 5A	0.20 %	Category 10A	No Restriction

Methyl β-naphthyl ketone

Category 5B	0.20 %	Category 10B	0.20 %
Category 5C	0.20 %	Category 11A	No Restriction
Category 5D	0.20 %	Category 11B	0.20 %
Category 6	0.20 %	Category 12	No Restriction

Fragrance ingredient restriction - Note box

The Standard is set due to the phototoxic effects of Methyl β-naphthyl ketone. For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the Guidance for the use of IFRA Standards.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**PHOTOTOXICITY**

RIFM SUMMARIES:

Human Studies:
A human phototoxicity study with Methyl β-naphthyl ketone (concentrations of 0.1, 1 and 10% in 3:1 DEP:EOH) was conducted. No reactions indicative of primary irritation were observed in this study. However, under irradiated conditions, Methyl β-naphthyl ketone at 10% in 3:1 DEP:EtOH

Methyl β-naphthyl ketone

produced moderate erythema in 5 subjects. These responses were stronger than those seen for the irradiated blank patch, which only produced slight to mild erythema. Under the conditions of the study, Methyl β-naphthyl ketone at 10% in 3:1 DEP:EtOH showed evidence of phototoxicity. Erythema scores for Methyl β-naphthyl ketone at 0.1% and 1.0% in 3:1 DEP:EtOH were similar to those seen for the blank patch under irradiated conditions. These reactions were not indicative of phototoxic responses (RIFM, 2004).

Other Studies:
Methyl β-naphthyl ketone has been observed to absorb in the UV range of 290-400 nm and is positive in the Neutral Red Uptake Phototoxicity Assay (RIFM, 2002). However, it has been shown to be non-phototoxic in guinea pigs at concentrations up to 60% in 3:1 EtOH:DEP (RIFM, 2003).

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Methyl β-naphthyl ketone and recommends the limits for the 12 different product categories, which are the acceptable use levels of Methyl β-naphthyl ketone in the various product categories.

REFERENCES:

The IFRA Standard on Methyl β-naphthyl ketone is based on at least one of the following publications:

• The RIFM Safety Assessment on Methyl β-naphthyl ketone is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Research Institute for Fragrance Materials, Inc. (2002). Methyl β-naphthyl ketone: Neutral red uptake phototoxicity assay in BALB/C 3T3 mouse fibroblasts. RIFM report number 40279, May 30 (RIFM, Woodcliff Lake, NJ, USA).

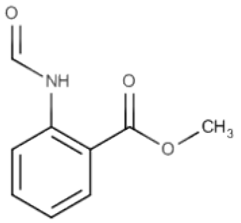
Methyl β-naphthyl ketone

• Research Institute for Fragrance Materials, Inc. (2003). Topical photoallergy screening test of β-Methyl naphthyl ketone in male albino hairless guinea pigs including primary irritation, phototoxicity and contact hypersensitivity evaluations. RIFM report number 44882, June 9 (RIFM, Woodcliff Lake, NJ, USA).

• Research Institute for Fragrance Materials, Inc. (2004). Evaluation of phototoxicity of Methyl β-naphthyl ketone in humans. RIFM report number 45136, March 16 (RIFM, Woodcliff Lake, NJ, USA).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Methyl N-formylanthranilate

CAS-No.:	41270-80-8 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_9H_9NO_3$
		Structure:	
Synonyms:	Benzoic acid, 2-(formylamino)-, methyl ester Methyl 2-(formylamino)benzoate Methyl 2-formamidobenzoate Methyl o-formamidobenzoate N-Formylanthranilic acid, methyl ester		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION / SPECIFICATION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.10 %	Category 7A	No Restriction
Category 2	0.10 %	Category 7B	0.10 %
Category 3	0.10 %	Category 8	0.10 %
Category 4	0.10 %	Category 9	No Restriction
Category 5A	0.10 %	Category 10A	No Restriction

Methyl N-formylanthranilate

Category 5B	0.10 %	Category 10B	0.10 %
Category 5C	0.10 %	Category 11A	No Restriction
Category 5D	0.10 %	Category 11B	0.10 %
Category 6	0.10 %	Category 12	No Restriction

Fragrance ingredient restriction - Note box

The Standard is set due to the phototoxic effects of Methyl N-formylanthranilate. For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the Guidance for the use of IFRA Standards.

FRAGRANCE INGREDIENT SPECIFICATION:	This material has been identified for having the potential of forming nitrosamines in nitrosating systems. Downstream users therefore have to be notified of the presence of the material and its potential, to be able to consider adequate protective measures.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX I**

ANNEX I

Natural Complex Substances (NCS) containing Methyl N-formylanthranilate

Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
0.05	41270-80-8	Jasmine sambac absolute	Jasminum sambac (L.) Aiton	103798-23-6	F2.1
0.03	41270-80-8	Orange flower oil, bitter (Neroli and Neroli bigarade)	Citrus aurantium L. ssp. Amara Link	8016-38-4	F2.12

Methyl N-formylanthranilate

This is a non-exhaustive indicative list of typical natural presence for Methyl N-formylanthranilate and is intended to be used in the absence of own analytical data. If analysis has shown that the level of the restricted ingredient in a natural complex substance is different from what is provided in this Annex I, then the analytically determined level should be used in place of the indicative level.
It should further be noted that natural complex substances themselves can be restricted by an IFRA Standard.
For a detailed list of natural contributions, please refer to the Annex I of IFRA Standards, publicly available on the IFRA website (www.ifrafragrance.org).

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	PHOTOTOXICITY, POTENTIAL OF NITROSAMINE FORMATION

RIFM SUMMARIES:

Phototoxicity effects of Methyl N-formylanthranilate have been assessed by read-across from Methyl N-methylanthranilate. The following studies have been considered for the determination of the phototoxicity potential of Methyl N-methylanthranilate:

• A human phototoxicity study at 0.5% in 75% Ethanol/25% Diethyl phthalate (DEP) resulted in 0/26 reactions (RIFM, 2001). Another human phototoxicity study with concentrations of 0.1, 0.3, and 0.5% resulted in 0/29 reactions (RIFM, 1998). Several other phototoxicity studies showed phototoxic reactions at 1% and 5% (Kaidbey and Kligman, 1980; Letizia and Api, 2003; RIFM, 1999).
• A human photosensitization study at 0.5% in 75% Ethanol/25% DEP resulted in 0/26 reactions (RIFM, 2001). Another human photosensitization study at 5.0% resulted in no photoallergic reactions. However, 14/18 phototoxic reactions were observed (RIFM, 1978a).
• A phototoxicity study at 50% in Methanol and 100% on hairless mice produced reactions at both dose levels (RIFM, 1978b).
• An in vitro phototoxicity assay using a human skin model (Skin2®) with concentrations of Methyl N-methylanthranilate ranging from 0.05% to 25% in corn oil showed that the material was phototoxic at dose levels above 5% (Api, 1997).

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Methyl N-formylanthranilate and recommends the limits for the 12 different product categories, which are the acceptable use levels of Methyl N-formylanthranilate in the various product categories.
In addition, they recommend to use Methyl N-formylanthranilate according to the specification above mentioned.

REFERENCES:

The IFRA Standard on Methyl N-formylanthranilate is based on at least one of the following publications:

• The RIFM Safety Assessment on Methyl N-formylanthranilate is available at the RIFM Safety

Methyl N-formylanthranilate

Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Api A.M. (1997). In vitro assessment of phototoxicity. In Vitro Toxicology: Journal of Molec. Cell. Toxicol., 10(3), 339-350.

• Kaidbey K.H. and Kligman A.M. (1980). Identification of contact photosensitizers by human assay. In Current Concepts In Cutaneous Toxicity, Academic Press, New York, pages 55-68.

• Letizia C.S. and Api A.M. (2003). Evaluation of the phototoxic and photoallergenic potential of Methyl N-methyl anthranilate. The Toxicologist, 72(S1), 378-379.

• Research Institute for Fragrance Materials, Inc. (1978a). Phototoxicity and contact photoallergy testing in human subjects. RIFM report number 1788, 18 January.

• Research Institute for Fragrance Materials, Inc. (1978b). Phototoxicity and irritation studies of mice and pigs with fragrance materials. RIFM report number 2042, 13 April.

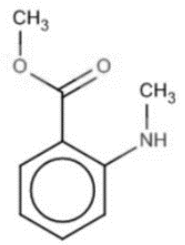
• Research Institute for Fragrance Materials, Inc. (1998). Evaluation of phototoxicity of Dimethyl anthranilate in humans. RIFM report number 34768, 8 December.

• Research Institute for Fragrance Materials, Inc. (1999). Evaluation of phototoxicity of Dimethyl anthranilate in humans. RIFM report number 34769, 20 July.

• Nitrosamine policy as contained in the EU Cosmetics Directive 76/768/EEC and its Amendments.

Additional information on the application of IFRA Standards is available in the Guidance to IFRA Standards, publicly available at www.ifrafragrance.org.

Methyl N-methylanthranilate

CAS-No.:	85-91-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_9H_{11}NO_2$
		Structure:	
Synonyms:	Benzoic acid, 2-(methylamino)-, methyl ester Dimethyl anthranilate 2-Methylamino methyl benzoate N-Methylanthranilic acid, methyl ester Methyl 2-(methylamino)benzoate Methyl 2-methylaminobenzoate Methyl o-methylaminobenzoate		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1978 2001 2002 2006 2009 2015

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION / SPECIFICATION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.10 %	Category 7A	No Restriction
Category 2	0.10 %	Category 7B	0.10 %
Category 3	0.10 %	Category 8	0.10 %

Methyl N-methylanthranilate

Category 4	0.10 %	Category 9	No Restriction
Category 5A	0.10 %	Category 10A	No Restriction
Category 5B	0.10 %	Category 10B	0.10 %
Category 5C	0.10 %	Category 11A	No Restriction
Category 5D	0.10 %	Category 11B	0.10 %
Category 6	0.10 %	Category 12	No Restriction

Fragrance ingredient restriction - Note box

The Standard is set due to the phototoxic effects of Methyl N-methylanthranilate. For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the Guidance for the use of IFRA Standards.

FRAGRANCE INGREDIENT SPECIFICATION:	This material has been identified for having the potential of forming nitrosamines in nitrosating systems. Downstream users therefore have to be notified of the presence of the material and its potential, to be able to consider adequate protective measures.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX I**

ANNEX I

Natural Complex Substances (NCS) containing Methyl N-methylanthranilate

Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
0.03	85-91-6	Clementine oil	Citrus clementina Hort. Ex Tan	93686-22-7	G2.5
0.34	85-91-6	Genet	Spartium junceum	90131-21-8	E2.1

Methyl N-methylanthranilate

		absolute	L.		
0.4	85-91-6	Mandarin oil	Citrus reticulata Blanco	8008-31-9	G2.5
10	85-91-6	Mandarin oil, terpeneless	Citrus reticulata Blanco	68917-20-4	G2.29
48.5	85-91-6	Petitgrain mandarin oil	Citrus reticulata Blanco	8014-17-3	E2.12
80	85-91-6	Petitgrain mandarin oil terpeneless	Citrus reticulata Blanco	84929-38-4	E2.29

This is a non-exhaustive indicative list of typical natural presence for Methyl N-methylanthranilate and is intended to be used in the absence of own analytical data. If analysis has shown that the level of the restricted ingredient in a natural complex substance is different from what is provided in this Annex I, then the analytically determined level should be used in place of the indicative level.
It should further be noted that natural complex substances themselves can be restricted by an IFRA Standard.
For a detailed list of natural contributions, please refer to the Annex I of IFRA Standards, publicly available on the IFRA website (www.ifrafragrance.org).

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	PHOTOTOXICITY, POTENTIAL OF NITROSAMINE FORMATION

RIFM SUMMARIES:

A human phototoxicity study at 0.5% in 75% Ethanol/25% Diethyl phthalate (DEP) resulted in 0/26 reactions (RIFM, 2001). Another human phototoxicity study with concentrations of 0.1, 0.3, and 0.5% resulted in 0/29 reactions (RIFM, 1998). Several other phototoxicity studies showed phototoxic reactions at 1% and 5% (Kaidbey and Kligman, 1980; Letizia and Api, 2003; RIFM, 1999).
A human photosensitization study at 0.5% in 75% Ethanol/25% DEP resulted in 0/26 reactions (RIFM, 2001). Another human photosensitization study at 5.0% resulted in no photoallergic reactions. However, 14/18 phototoxic reactions were observed (RIFM, 1978a).

A phototoxicity study at 50% in Methanol and 100% on hairless mice produced reactions at both dose levels (RIFM, 1978b).

An in vitro phototoxicity assay using a human skin model (Skin2®) with concentrations of Methyl N-methylanthranilate ranging from 0.05% to 25% in corn oil showed that the material was phototoxic at dose levels above 5% (Api, 1997).

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Methyl N-methylanthranilate and recommends the limits for the 12 different product categories, which are the acceptable use levels of Methyl N-methylanthranilate in the various product categories.
In addition, they recommend to use Methyl N-methylanthranilate according to the specification above mentioned.

Methyl N-methylanthranilate

REFERENCES:

The IFRA Standard on Methyl N-methylanthranilate is based on at least one of the following publications:

• The RIFM Safety Assessment on Methyl N-methylanthranilate is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Api A.M. (1997). In vitro assessment of phototoxicity. In Vitro Toxicology: Journal of Molec. Cell. Toxicol., 10(3), 339-350.

• Kaidbey K.H. and Kligman A.M. (1980). Identification of contact photosensitizers by human assay. In Current Concepts In Cutaneous Toxicity, Academic Press, New York, pages 55-68.

• Letizia C.S. and Api A.M. (2003). Evaluation of the phototoxic and photoallergenic potential of methyl N-methyl anthranilate. The Toxicologist, 72(S1), 378-379.

• Research Institute for Fragrance Materials, Inc. (1978a). Phototoxicity and contact photoallergy testing in human subjects. RIFM report number 1788, 18 January.

• Research Institute for Fragrance Materials, Inc. (1978b). Phototoxicity and irritation studies of mice and pigs with fragrance materials. RIFM report number 2042, 13 April.

• Research Institute for Fragrance Materials, Inc. (1998). Evaluation of phototoxicity of dimethyl anthranilate in humans. RIFM report number 34768, 8 December.

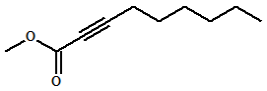
• Research Institute for Fragrance Materials, Inc. (1999). Evaluation of phototoxicity of dimethyl anthranilate in humans. RIFM report number 34769, 20 July.

• Nitrosamine policy as contained in the EU Cosmetics Directive 76/768/EEC and its Amendments.

Methyl N-methylanthranilate

Additional information on the application of IFRA Standards is available in the Guidance to IFRA Standards, publicly available at www.ifrafragrance.org.

Methyl octine carbonate

CAS-No.:	111-80-8 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{10}H_{16}O_2$
		Structure:	
Synonyms:	Methyl octyne carbonate Methyl 2-nonynoate 2-Nonynoic acid, methyl ester MOC		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1988 2000 2008

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.0018 %	Category 7A	0.021 %
Category 2	0.00055 %	Category 7B	0.021 %
Category 3	0.011 %	Category 8	0.0011 %
Category 4	0.010 %	Category 9	0.020 %
Category 5A	0.0026 %	Category 10A	0.072 %
Category 5B	0.0026 %	Category 10B	0.072 %

Methyl octine carbonate

Category 5C	0.0026 %	Category 11A	0.040 %
Category 5D	0.0026 %	Category 11B	0.040 %
Category 6	0.0061 %	Category 12	No Restriction

Fragrance ingredient restriction - Note box

When used in the same fragrance compound within a specific QRA category, the sum total of and Methyl heptine carbonate (MHC, CAS number 111-12-6) and Methyl octine carbonate (MOC, CAS number 111-80-8) contributions must not exceed the maximum permitted level for MHC. At the same time, the contribution from MOC should always respect the maximum levels permitted as listed in the table above.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is

Methyl octine carbonate

derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Methyl octine carbonate, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Methyl octine carbonate and recommends the limits for the 12 different product categories, which are the acceptable use levels of Methyl octine carbonate in the various product categories.

REFERENCES:

The IFRA Standard on Methyl octine carbonate is based on at least one of the following publications:

• The RIFM Safety Assessment on Methyl octine carbonate if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

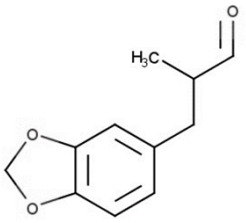
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

α-Methyl-1,3-benzodioxole-5-propionaldehyde (MMDHCA)

CAS-No.:	1205-17-0 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{11}H_{12}O_3$
		Structure:	
Synonyms:	1,3-Benzodioxole-5-propanal, α-methyl- 3-(1,3-Benzodioxol-5-yl)-2-methylpropanal 2-Methyl-3-(3,4-methylenedioxyphenyl)- propionaldehyde 2-Methyl-3-(3,4-methylenedioxyphenyl)propanal α-Methyl-3,4-(methylenedioxy)-hydrocinnamaldehyde α-Methyl-1,3-benzodioxole-5-propanal α-Methyl-1,3-benzodioxole-5-propionaldehyde 3-(3,4-Methylenedioxyphenyl)-2-methylpropanal α-Methyl-3,4-methylene-dioxyhydrocinnamic aldehyde Heliofolal (commercial name) Heliogan (commercial name) Helional (commercial name) Tropional (commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2012 2013

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.12 %	Category 7A	0.077 %

α-Methyl-1,3-benzodioxole-5-propionaldehyde (MMDHCA)

Category 2	0.25 %	Category 7B	0.077 %
Category 3	0.039 %	Category 8	0.026 %
Category 4	2.6 %	Category 9	0.15 %
Category 5A	0.39 %	Category 10A	0.15 %
Category 5B	0.077 %	Category 10B	0.62 %
Category 5C	0.077 %	Category 11A	0.026 %
Category 5D	0.026 %	Category 11B	0.026 %
Category 6	0.62 %	Category 12	12 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX II**

ANNEX II				
α-Methyl-1,3-benzodioxole-5-propionaldehyde (MMDHCA)	**CAS number (Aldehyde)**	**Schiff base**	**CAS number (Schiff base)**	**Level of restricted aldehyde in the Schiff base (%)**
α-Methyl-1,3-benzodioxole-5-propionaldehyde (Helional, MMDHCA)	1205-17-0	Helional-methyl anthranilate (or Helioforte)	111753-60-7	59.1

α-Methyl-1,3-benzodioxole-5-propionaldehyde (MMDHCA)

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for α-Methyl-1,3-benzodioxole-5-propionaldehyde (MMDHCA), which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for α-Methyl-1,3-benzodioxole-5-propionaldehyde (MMDHCA) and recommends the limits for the 12 different product categories, which are the acceptable use levels of α-Methyl-1,3-benzodioxole-5-propionaldehyde (MMDHCA) in the various product categories.

REFERENCES:

The IFRA Standard on α-Methyl-1,3-benzodioxole-5-propionaldehyde (MMDHCA) is based on at least one of the following publications:

• The RIFM Safety Assessment on α-Methyl-1,3-benzodioxole-5-propionaldehyde (MMDHCA) if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

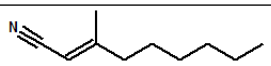
• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials

α-Methyl-1,3-benzodioxole-5-propionaldehyde (MMDHCA)

for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

3-Methyl-2(3)-nonenenitrile

CAS-No.:	53153-66-5 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{10}H_{17}N$
		Structure:	
Synonyms:	2-Nonenenitrile, 3-methyl- Citgrenile (commercial name)		

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	1980 1983 2007

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	3-Methyl-2(3)-nonenenitrile should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

3-Methyl-2(3)-nonenenitrile

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 3-Methyl-2(3)-nonenenitrile and recommends not to use 3-Methyl-2(3)-nonenenitrile as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on 3-Methyl-2(3)-nonenenitrile is based on at least one of the following publications:

• The RIFM Safety Assessment on 3-Methyl-2(3)-nonenenitrile if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

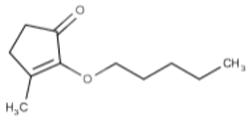
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

3-Methyl-2-(pentyloxy)cyclopent-2-en-1-one

CAS-No.:	68922-13-4 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{11}H_{18}O_2$
		Structure:	
Synonyms:	2-Cyclopenten-1-one, 2-(pentyloxy)-3-methyl- Pentyloxy cyclopentenone (commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2011

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.085 %	Category 7A	0.96 %
Category 2	0.025 %	Category 7B	0.96 %
Category 3	0.51 %	Category 8	0.050 %
Category 4	0.47 %	Category 9	0.92 %
Category 5A	0.12 %	Category 10A	3.3 %
Category 5B	0.12 %	Category 10B	3.3 %

3-Methyl-2-(pentyloxy)cyclopent-2-en-1-one

Category 5C	0.12 %	Category 11A	1.8 %
Category 5D	0.12 %	Category 11B	1.8 %
Category 6	0.28 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 3-Methyl-2-(pentyloxy)cyclopent-2-en-1-one, which can be downloaded from the RIFM Safety Assessment

3-Methyl-2-(pentyloxy)cyclopent-2-en-1-one

Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 3-Methyl-2-(pentyloxy)cyclopent-2-en-1-one and recommends the limits for the 12 different product categories, which are the acceptable use levels of 3-Methyl-2-(pentyloxy)cyclopent-2-en-1-one in the various product categories.

REFERENCES:

The IFRA Standard on 3-Methyl-2-(pentyloxy)cyclopent-2-en-1-one is based on at least one of the following publications:

• The RIFM Safety Assessment on 3-Methyl-2-(pentyloxy)cyclopent-2-en-1-one if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

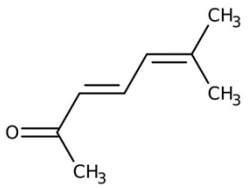
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

6-Methyl-3,5-heptadien-2-one

CAS-No.:	1604-28-0 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_8H_{12}O$
		Structure:	
Synonyms:	3,5-Heptadien-2-one, 6-methyl- Methylheptadienone 2-Methylhepta-2,4-dien-6-one 6-Methylhepta-3,5-dien-2-one		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1989 1999 2009

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.0085 %	Category 7A	0.096 %
Category 2	0.0025 %	Category 7B	0.096 %
Category 3	0.051 %	Category 8	0.0050 %
Category 4	0.047 %	Category 9	0.092 %
Category 5A	0.012 %	Category 10A	0.33 %
Category 5B	0.012 %	Category 10B	0.33 %

6-Methyl-3,5-heptadien-2-one

Category 5C	0.012 %	Category 11A	0.18 %
Category 5D	0.012 %	Category 11B	0.18 %
Category 6	0.028 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 6-Methyl-3,5-heptadien-2-one, which can be downloaded from the RIFM Safety Assessment Sheet Database:

6-Methyl-3,5-heptadien-2-one

http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 6-Methyl-3,5-heptadien-2-one and recommends the limits for the 12 different product categories, which are the acceptable use levels of 6-Methyl-3,5-heptadien-2-one in the various product categories.

REFERENCES:

The IFRA Standard on 6-Methyl-3,5-heptadien-2-one is based on at least one of the following publications:

• The RIFM Safety Assessment on 6-Methyl-3,5-heptadien-2-one if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

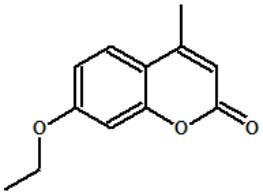
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

4-Methyl-7-ethoxycoumarin

CAS-No.:	87-05-8 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{12}H_{12}O_3$
		Structure:	
Synonyms:	2H-1-Benzopyran-2-one, 7-ethoxy-4-methyl- Coumarin, 7-ethoxy-4-methyl- 7-Ethoxy-4-methylcoumarin 4-Methyl-7-ethoxybenzopyrone Maraniol (commercial name)		

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1979 2002

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	4-Methyl-7-ethoxycoumarin should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

4-Methyl-7-ethoxycoumarin

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	PHOTOSENSITIZATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 4-Methyl-7-ethoxycoumarin and recommends not to use 4-Methyl-7-ethoxycoumarin as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on 4-Methyl-7-ethoxycoumarin is based on at least one of the following publications:

• The RIFM Safety Assessment on 4-Methyl-7-ethoxycoumarin if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

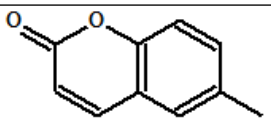
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

6-Methylcoumarin

CAS-No.:	92-48-8 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{10}H_8O_2$
		Structure:	
Synonyms:	2H-1-Benzopyran-2-one, 6-methyl 6-Methyl-2h-1-benzopyran-2-one 6-Methylbenzopyrone 6-Methyl coumarin 6-Methyl-cis-o-coumarinic lactone 5-Methyl-2-hydroxyphenylpropenoic acid lactone Toncarine (commercial name)		

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1978 1980 2002

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	6-Methylcoumarin should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE**

6-Methylcoumarin

	GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	PHOTOSENSITIZATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 6-Methylcoumarin and recommends not to use 6-Methylcoumarin as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on 6-Methylcoumarin is based on at least one of the following publications:

• The RIFM Safety Assessment on 6-Methylcoumarin is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

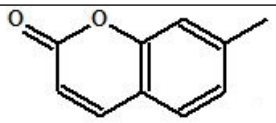
• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Kaidbay, K.H. &. Kligman, A.M. (1978), Contact Dermatitis 4, No 5, 277.

• Opdyke, D.L.J. (1979), Food and Cosmetics Toxicology 17, 275.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

7-Methylcoumarin

CAS-No.:	2445-83-2 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{10}H_8O_2$
		Structure:	
Synonyms:	2H-1-Benzopyran-2-one, 7-methyl- 7-Methyl-2-H-1-benzopyran-2-one		

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1979 1983 2002

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	7-Methylcoumarin should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

7-Methylcoumarin

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION, PHOTOSENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 7-Methylcoumarin and recommends not to use 7-Methylcoumarin as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on 7-Methylcoumarin is based on at least one of the following publications:

• The RIFM Safety Assessment on 7-Methylcoumarin is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

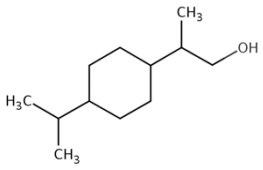
• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Opdyke, D.L.J., Letizia, C.S. (1982), Food and Chemical Toxicology 20, 747.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

4-(Isopropyl)-.β.-methylcyclohexanethanol

CAS-No.:	67634-03-1 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{12}H_{24}O$
		Structure:	
Synonyms:	2-(4-Isopropylcyclohexyl)propan-1-ol Cyclohexaneethanol, .β.-methyl-4-(1-methylethyl)- Rodipol C (Commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.26 %	Category 7A	0.26 %
Category 2	0.39 %	Category 7B	0.26 %
Category 3	0.26 %	Category 8	0.086 %
Category 4	6.4 %	Category 9	4.9 %
Category 5A	0.52 %	Category 10A	4.9 %
Category 5B	0.26 %	Category 10B	1.0 %

4-(Isopropyl)-.β.-methylcyclohexanethanol

Category 5C	0.26 %	Category 11A	0.086 %
Category 5D	0.086 %	Category 11B	0.086 %
Category 6	0.26 %	Category 12	20 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 4-(Isopropyl)-.β.-methylcyclohexanethanol, which can be downloaded from the RIFM Safety Assessment Sheet

4-(Isopropyl)-.β.-methylcyclohexanethanol

Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 4-(Isopropyl)-.β.-methylcyclohexanethanol and recommends the limits for the 12 different product categories, which are the acceptable use levels of 4-(Isopropyl)-.β.-methylcyclohexanethanol in the various product categories.

REFERENCES:

The IFRA Standard on 4-(Isopropyl)-.β.-methylcyclohexanethanol is based on at least one of the following publications:

• The RIFM Safety Assessment on 4-(Isopropyl)-.β.-methylcyclohexanethanol if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

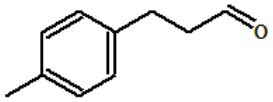
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

p-Methylhydrocinnamic aldehyde

CAS-No.:	5406-12-2 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{10}H_{12}O$
		Structure:	
Synonyms:	Benzenepropanal, 4-methyl p-Methyldihydrocinnamaldehyde p-Methylhydrocinnamaldehyde 3-(4-Methylphenyl)propanal 3-p-Tolylpropionaldehyde		

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	1987 1994 2002 2007

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	p-Methylhydrocinnamic aldehyde should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA**

p-Methylhydrocinnamic aldehyde

	STANDARDS)

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for p-Methylhydrocinnamic aldehyde and recommends not to use p-Methylhydrocinnamic aldehyde as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on p-Methylhydrocinnamic aldehyde is based on at least one of the following publications:

• The RIFM Safety Assessment on p-Methylhydrocinnamic aldehyde if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

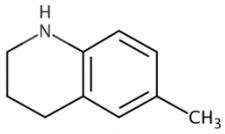
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

p-Methyltetrahydroquinoline

CAS-No.:	91-61-2 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{10}H_{13}N$
		Structure:	
Synonyms:	6-Methyl-1,2,3,4-tetrahydroquinoline Quinoline, 1,2,3,4-tetrahydro-6-methyl- 1,2,3,4-Tetrahydro-6-methylquinoline Tetrahydro-p-methylquinoline		

History:	Publication date:	2009 (Amendment 44)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	August 7, 2009
	For existing fragrance compounds*:	August 7, 2010
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**SPECIFICATION**

FRAGRANCE INGREDIENT SPECIFICATION:	The material has been identified for having the potential of forming nitrosamines in nitrosating systems. Downstream users therefore have to be notified of the presence of the material and its potential, to be able to consider adequate protective measures.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must

p-Methyltetrahydroquinoline

	not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**POTENTIAL OF NITROSAMINE FORMATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for p-Methyltetrahydroquinoline. Based on their expert judgement, they recommend to use the fragrance ingredient according to its specification mentioned above.

REFERENCES:

The IFRA Standard on p- Methyltetrahydroquinoline is based on at least one of the following publications:

• The RIFM Safety Assessment on p- Methyltetrahydroquinoline if available at the RIFM Safety Assessment Sheet Database:
http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014).
(http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016

p-Methyltetrahydroquinoline

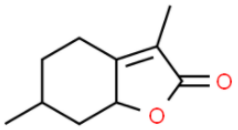
(http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Nitrosamine policy as contained in the EU Cosmetics Directive 76/768/EEC and its Amendments.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Mintlactone

CAS-No.:	13341-72-5 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Structure:**	
Synonyms:	2(4H)-Benzofuranone, 5,6,7,7a-tetrahydro-3,6-dimethyl- 3,6-Dimethyl-5,6,7,7a-tetrahydro-1-benzofuran-2(4H)-one 3,6-Dimethyl-5,6,7,7a-tetrahydro-2(4H)benzo-furanone 5,6,7,7a-Tetrahydro-3,6-dimethyl-(4H)-benzofuran-2-one Dehydroxymenthofurolactone Menthalactone Mint furanone		

History:	Publication date:	June 30, 2021	Previous Publications:	Not applicable

Implementation dates:	For new submissions*:	August 30, 2021
	For existing fragrance compounds*:	July 30, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Mintlactone should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Mintlactone

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	GENOTOXICITY

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The material Mintlactone has been reviewed by the Expert Panel for Fragrance Safety with the conclusion that it cannot be safely used as a fragrance ingredient. If the substance is found as an impurity in other fragrance ingredients, please check the latest version of the Guidance to the IFRA Standards for the respective IFRA procedure.

REFERENCES:

The IFRA Standard on Mintlactone is based on at least one of the following publications:

• The RIFM Safety Assessment on Mintlactone if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

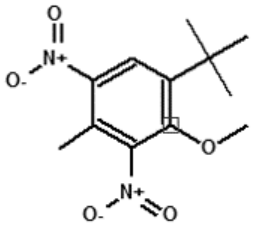
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Musk ambrette

CAS-No.:	83-66-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{12}H_{16}N_2O_5$
		Structure:	
Synonyms:	Benzene, 1-(1,1-dimethylethyl)-2-methoxy-4-methyl-3,5-dinitro- 1-tert-Butyl-2-methoxy-4-methyl-3,5-dinitrobenzene 4-tert-Butyl-3-methoxy-2,6-dinitrotoluene 6-tert-Butyl-3-methyl-2,4-dinitroanisole 1-(1,1-Dimethylethyl)-2-methoxy-4-methyl-3,5-dinitrobenzene 2,6-Dinitro-3-methoxy-1-methyl-4-tert-butylbenzene 2,6-Dinitro-3-methoxy-4-tert-butyltoluene 2,4-Dinitro-3-methyl-6-tert-butylanisole		

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1981 1994 1995 2002

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Musk ambrette should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE**

Musk ambrette

	SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	PHOTOSENSITIZATION, NEUROTOXICITY

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Musk ambrette and recommends not to use Musk ambrette as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Musk ambrette is based on at least one of the following publications:

• The RIFM Safety Assessment on Musk ambrette is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

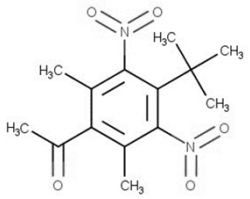
• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Spencer, P.S., Bischoff-Fenton, M.C., Moreno, O.M., Opdyke D.L. and Ford, R.A. (1984), Toxicology and Applied Pharmacology 75, 571.

Musk ambrette

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Musk ketone

CAS-No.:	81-14-1 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{14}H_{18}N_2O_5$
		Structure:	
Synonyms:	1-(4-tert-Butyl-2,6-dimethyl-3,5-dinitrophenyl) ethanone 4'-tert-butyl-2',6'-dimethyl-3',5'-dinitroacetophenone 3,5-Dinitro-2,6-dimethyl-4-tert-butylacetophenone 1-[4-(1,1-Dimethylethyl)-2,6-dimethyl-3,5-dinitrophenyl]ethanone Ethanone, 1-[4-(1,1-dimethylethyl)-2,6-dimethyl-3,5-dinitrophenyl]-		

History:	Publication date:	2010 (Amendment 45)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	January 11, 2011
	For existing fragrance compounds*:	January 11, 2012
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**SPECIFICATION**

FRAGRANCE INGREDIENT SPECIFICATION:	Musk xylene (CAS number 81-15-2), which has been prohibited for use in fragrance compounds for environmental reasons (vPvB), can be present in Musk ketone as an impurity. Musk ketone should only be used if it contains less than 0.1% of Musk xylene.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts

Musk ketone

	of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**SEE FRAGRANCE MATERIAL SPECIFICATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Musk ketone. Based on their expert judgement, they recommend to use the fragrance ingredient according to its specification mentioned above.

REFERENCES:

The IFRA Standard on Musk ketone is based on at least one of the following publications:

• The RIFM Safety Assessment on Musk ketone if available at the RIFM Safety Assessment Sheet Database:
http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014).
(http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2:

Musk ketone

Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• PBT draft Addendum to the final report (2005) of the Risk Assessment (PBT assessment), January 2008 (the Netherlands National Institute for Public health and Environment, RIVM) (https://echa.europa.eu/documents/10162/cb2b7fc5-8af1-46df-a1c0-7bf8335162a0).

• ECHA (European Chemicals Agency, Member State Committee, Substances of Very High Concern support document for identification of 5-tert-butyl-2,4,6-trinitro-m-xylene, Adopted on October 8, 2008 (https://echa.europa.eu/documents/10162/909dd42e-2554-4f59-911a-729a2da1d529).

• IFRA Standard on Musk xylene.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Musk KS

CAS-No.:	62265-99-0 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_8H_7Br_2NO_3$
		Structure:	
Synonyms:	1,3-Dibromo-2-methoxy-4-methyl-5-nitrobenzene Benzene, 1,3-dibromo-2-methoxy-4-methyl-5-nitro- 1,3-Dibromo-2-methoxy-5-nitro-6-methylbenzene 2,4-Dibromo-3-methoxy-6-nitrotoluene 2,6-Dibromo-3-methyl-4-nitroanisole 6-Nitro-2,4-dibromo-3-methoxytoluene Bromorose Musk KS (commercial name)		

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Musk KS should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM**

Musk KS

	OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	INSUFFICIENT DATA

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Musk KS and recommends not to use Musk KS as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:

The IFRA Standard on Musk KS is based on at least one of the following publications:

• The RIFM Safety Assessment on Musk KS if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

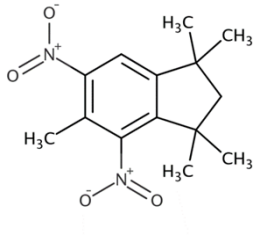
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Musk moskene

CAS-No.:	116-66-5 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{14}H_{18}N_2O_4$
		Structure:	
Synonyms:	1,1,3,3,5-Pentamethyl-4,6-dinitroindane 1H-Indene, 2,3-dihydro-1,1,3,3,5-pentamethyl-4,6,-dinitro-		

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	2005

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Musk moskene should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Musk moskene

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**INSUFFICIENT DATA**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Musk moskene and recommends not to use Musk moskene as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:

The IFRA Standard on Musk moskene is based on at least one of the following publications:

• The RIFM Safety Assessment on Musk moskene if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

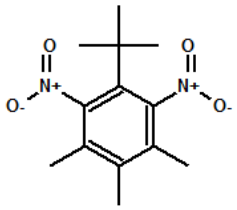
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Musk tibetene

CAS-No.:	145-39-1 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{13}H_{18}N_2O_4$
		Structure:	
Synonyms:	1-tert-Butyl-2,6-dinitro-3,4,5-trimethylbenzene Benzene, 1-(1,1-dimethylethyl)-3,4,5-trimethyl-2,6-dinitro-		

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	2005

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Musk tibetene should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Musk tibetene

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**INSUFFICIENT DATA**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Musk tibetene and recommends not to use Musk tibetene as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:

The IFRA Standard on Musk tibetene is based on at least one of the following publications:

• The RIFM Safety Assessment on Musk tibetene if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

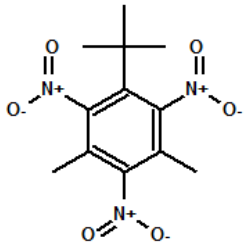
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Musk xylene

CAS-No.:	81-15-2 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{12}H_{15}N_3O_6$
		Structure:	
Synonyms:	2,4,6-Trinitro-1,3-methyl-5-tert-butylbenzene 1-tert-Butyl-3,5-dimethyl-2,4,6-trinitrobenzene Benzene, 1-(1,1-dimethylethyl)-3,5-dimethyl-2,4,6-trinitro- Musk xylol		

History:	Publication date:	2009 (Amendment 44)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	August 7, 2009
	For existing fragrance compounds*:	August 7, 2010
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Musk xylene should not be used as a fragrance ingredient. Musk xylene can be present in Musk ketone as an impurity. Please refer to the IFRA Specification Standard on Musk ketone.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE**

Musk xylene

	SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**VPVB**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Musk xylene and recommends not to use Musk xylene as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Musk xylene is based on at least one of the following publications:

• The RIFM Safety Assessment on Musk xylene is available at the RIFM Safety Assessment Sheet Database:
http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014).
(http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308.
(https://www.ncbi.nlm.nih.gov/pubmed/12069318).

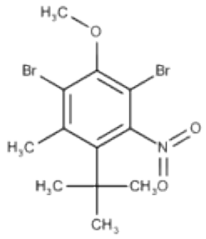
• PBT draft Addendum to the final report (2005) of the Risk Assessment (PBT assessment), January 2008 (the Netherlands National Institute for Public health and Environment, RIVM) (https://echa.europa.eu/documents/10162/cb2b7fc5-8af1-46df-a1c0-7bf8335162a0).

Musk xylene

• ECHA (European Chemicals Agency, Member State Committee, Substances of Very High Concern support document for identification of 5-tert-butyl-2,4,6-trinitro-m-xylene, Adopted on October 8, 2008 (https://echa.europa.eu/documents/10162/909dd42e-2554-4f59-911a-729a2da1d529).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Musk α

CAS-No.:	63697-53-0 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{12}H_{15}Br_2NO_3$
		Structure:	
Synonyms:	Musk alpha 1,3-Dibromo-2-methoxy-4-nitro-5-(1,1-dimethylethyl)-6-methyl-benzene Benzene,1,3-dibromo-5-(1,1-dimethylethyl)-2- methoxy-4-methyl-6-nitro-		

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Musk α should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Musk α

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**INSUFFICIENT DATA**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Musk α and recommends not to use Musk α as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:

The IFRA Standard on Musk α is based on at least one of the following publications:

• The RIFM Safety Assessment on Musk α if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

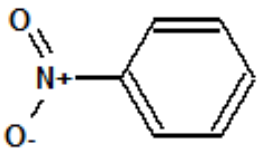
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Nitrobenzene

CAS-No.:	98-95-3 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_6H_5NO_2$
		Structure:	
Synonyms:	Benzene, nitro Nitrobenzol Mirbane oil		

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1974 2002

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Nitrobenzene should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Nitrobenzene

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	ACUTE TOXICITY, SKIN TOXICITY

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Nitrobenzene and recommends not to use Nitrobenzene as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Nitrobenzene is based on at least one of the following publications:

• The RIFM Safety Assessment on Nitrobenzene is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

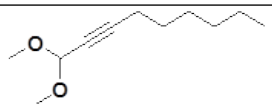
• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Christensen, H.E., Toxic Substances List, National Institute for Occupational Safety and Health (1972), p. 369.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

2-Nonyn-1-al dimethyl acetal

CAS-No.:	13257-44-8 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{11}H_{20}O_2$
		Structure:	
Synonyms:	1,1-Dimethoxynon-2-yne 2-Nonyn-1-al-Dimeth-Acetyl 2-Nonyne, 1,1-dimethoxy- Parmavert (commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2011

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	1.8 %	Category 7A	20 %
Category 2	0.53 %	Category 7B	20 %
Category 3	11 %	Category 8	1.0 %
Category 4	9.9 %	Category 9	19 %
Category 5A	2.5 %	Category 10A	69 %
Category 5B	2.5 %	Category 10B	69 %

2-Nonyn-1-al dimethyl acetal

Category 5C	2.5 %	Category 11A	38 %
Category 5D	2.5 %	Category 11B	38 %
Category 6	5.8 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 2-Nonyn-1-al dimethyl acetal, which can be downloaded from the RIFM Safety Assessment Sheet Database:

2-Nonyn-1-al dimethyl acetal

http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 2-Nonyn-1-al dimethyl acetal and recommends the limits for the 12 different product categories, which are the acceptable use levels of 2-Nonyn-1-al dimethyl acetal in the various product categories.

REFERENCES:

The IFRA Standard on 2-Nonyn-1-al dimethyl acetal is based on at least one of the following publications:

• The RIFM Safety Assessment on 2-Nonyn-1-al dimethyl acetal if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Esters of 2-Nonynoic acid (except Methyl octine carbonate)

CAS-No.:	e.g.: 10031-92-2 This IFRA Standard covers CAS numbers of any esters of 2-Nonynoic acid (except Methyl octine carbonate, CAS number 111-80-8).	**Molecular formula:**	Not applicable.
Synonyms:	Ethyl 2-nonynoate Ethyl octine carbonate Ethyl octyne carbonate 2-Nonynoic acid, ethyl ester		

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Esters of 2-Nonynoic acid (except Methyl octine carbonate) should not be used as a fragrance ingredient. For Methyl octine carbonate (CAS Number 111-80-8), please refer to the IFRA Restricted Standard Methyl octine carbonate.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM**

Esters of 2-Nonynoic acid (except Methyl octine carbonate)

	OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	INSUFFICIENT DATA

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Esters of 2-Nonynoic acid (except Methyl octine carbonate) and recommends not to use Esters of 2-Nonynoic acid (except Methyl octine carbonate) as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:

The IFRA Standard on Esters of 2-Nonynoic acid (except Methyl octine carbonate) is based on at least one of the following publications:

• The RIFM Safety Assessment on Esters of 2-Nonynoic acid (except Methyl octine carbonate) if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

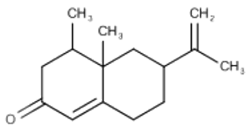
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Nootkatone

CAS-No.:	4674-50-4 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{15}H_{22}O$
		Structure:	
Synonyms:	5,6-Dimethyl-8-isopropenylbicyclo(4.4.0)dec-1-en-3-one 4a,5-Dimethyl-1,2,3,4,4a,5,6,7-octahydro-7-keto-3-isopropenylnaphthalene 4betaH,5alpha-Eremorphila-1(10),11-dien-2-one (4R-(4alpha,4a alpha,6beta))-4,4a,5,6,7,8-Hexahydro-4,4a-dimethyl-6-(1-methylvinyl)naphthalen-2(3H)-one 4,4a,5,6,7,8-Hexahydro-6-isopropenyl-4,4a-dimethyl-2(3H)-naphthalenone 2(3H)-Naphthalenone, 4,4a,5,6,7,8-hexahydro-4,4a-dimethyl-6-(1-methylethenyl)-, (4R,4aS,6R)-		

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1980

Implementation dates:	For new submissions*:	December 11, 2006
	For existing fragrance compounds*:	December 11, 2007
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**SPECIFICATION**

FRAGRANCE INGREDIENT SPECIFICATION:	Nootkatone used as a fragrance ingredient should be at least 98% pure, with a melting point of at least 32°C. Lower purity grades may not be used as a fragrance ingredient.

Nootkatone

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Nootkatone is found in natural extracts, but its natural contributions are not relevant for the fragrance ingredient specification mentioned above.

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Nootkatone. Based on their expert judgement, they recommend to use the fragrance ingredient according to its specification mentioned above.

REFERENCES:

The IFRA Standard on Nootkatone is based on at least one of the following publications:

• The RIFM Safety Assessment on Nootkatone is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

Nootkatone

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Research Institute for Fragrance Materials, Inc., 1971. Sensitization and irritation study of nootkatone. Unpublished report from Givaudan, May 24, Report number 41820.

• Research Institute for Fragrance Materials, Inc., 1977. Report on human maximization studies. RIFM report number 1702, June 6c.

• Research Institute for Fragrance Materials, Inc., 1978. Report on human maximization studies. RIFM report number 1698, January 13a.

• Research Institute for Fragrance Materials, Inc., 1979. Report on human maximization studies. RIFM report number 1775, September 11.

• Research Institute for Fragrance Materials, Inc., 2005. Repeated insult patch test with nootkatone. Unpublished report from Bedoukian Research, Inc., May 11. Report number 46155.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Oakmoss extracts

CAS-No.:	90028-68-5 68917-10-2 9000-50-4 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.	**Molecular formula:**	Not applicable.
Synonyms:	Oakmoss absolute Evernia absolute Evernia prunastri, ext. Mousse de Chêne absolute Oakmoss absolute (Evernia prunastri) Evernia prunastri (Oakmoss) extract		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1991 2001 2008

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION / SPECIFICATION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.020 %	Category 7A	0.10 %
Category 2	0.016 %	Category 7B	0.10 %
Category 3	0.10 %	Category 8	0.032 %
Category 4	0.10 %	Category 9	0.10 %

Oakmoss extracts

Category 5A	0.076 %	Category 10A	0.10 %
Category 5B	0.076 %	Category 10B	0.10 %
Category 5C	0.076 %	Category 11A	0.10 %
Category 5D	0.076 %	Category 11B	0.10 %
Category 6	0.18 %	Category 12	No Restriction

Fragrance ingredient restriction - Note box

For Oakmoss and Treemoss extracts, the restrictions in the Standards are directly linked to the presence of Atranol and Chloroatranol in the finished products. To ensure that those remain below trace levels, the upper concentration levels have not been increased (compared its last publication in the Amendment 43 (2008)).

In the presence of Treemoss extracts, the level of Oakmoss in the respective category has to be reduced accordingly, such that the total amount of both extracts does not exceed the maximum permitted level in each category as listed in the table above.
If the same fragrance mixture is intended to be used in more than one IFRA Category, then the most restrictive limitation (based on foreseen use concentrations and maximum permitted level) will apply.

FRAGRANCE INGREDIENT SPECIFICATION:	Oakmoss extracts must not contain added Treemoss, which is a source of resin acids. Traces of resin acids may be carried over to commercial qualities of Oakmoss in the manufacturing process. These traces must not exceed 0.1% (1000 ppm) of Dehydroabietic acid (DHA) in the extract. The concentration of resin acids in Oakmoss can be measured with an High Performance Liquid Chromatography (HPLC) Reverse Phase – Spectrofluorometry method. Further, levels of Atranol and Chloroatranol should each be below 100 ppm in Oakmoss extracts.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of

Oakmoss extracts

	Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Oakmoss extracts, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Oakmoss extracts and recommends the limits for the 12 different product categories, which are the acceptable use levels of Oakmoss extracts in the various product categories.
In addition, they recommend to use Oakmoss extracts according to the specification above mentioned.

REFERENCES:

The IFRA Standard on Oakmoss extracts is based on at least one of the following publications:

• The RIFM Safety Assessment on Oakmoss extracts if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

Oakmoss extracts

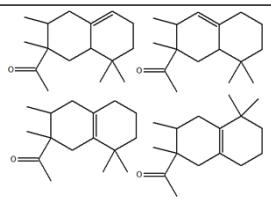
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

1-(1,2,3,4,5,6,7,8 Octahydro-2,3,8,8-tetramethyl-2-naphthalenyl) ethanone (OTNE)

CAS-No.:	54464-57-2 54464-59-4 68155-66-8 68155-67-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{16}H_{26}O$
		Structure:	
Synonyms:	54464-57-2: 1-(1,2,3,4,5,6,7,8-Octahydro-2,3,8,8-tetramethyl-2-naphthalenyl)ethanone 1',2',3',4',5',6',7',8'-Octahydro-2',3',8',8'-tetramethyl-2'-acetonaphthone 1-(1,2,3,4,5,6,7,8-octahydro-2,3,8,8-tetramethyl-2-naphthyl)ethan-1-one 1-(2,3,8,8-tetramethyl-1,2,3,4,5,6,7,8-octahydronaphthalen-2-yl)ethanone 2-acetoxy-2,3,8,8-tetramethyloctahydronaphthalene 7-Acetyl-1,2,3,4,5,6,7,8-octahydro-1,1,6,7-tetramethylnaphthalene Ethanone, 1-(1,2,3,4,5,6,7,8-octahydro-2,3,8,8-tetramethyl-2-naphthalenyl)- Naphthalene, 1,2,3,4,5,6,7,8-octahydro-2,3,8,8-tetramethyl-2-aceto Ambergris Ketone (commercial name) Amberonne (commercial name) Ambralux (commercial name) Boisvelone (commercial name) Iso Ambois Super (commercial name) Iso-E Super (commercial name) Iso Gamma Super (commercial name) Isocyclemone E (commercial name) Orbitone (commercial name) Orbitone T (commercial name) 54464-59-4: 1- (1,2,3,4,5,6,7,8- octahydro-2,3,5,5- tetramethyl-2- naphthalenyl)ethan-1-one 1-(2,3,5,5-tetramethyl-1,2,3,4,5,6,7,8-octahydronaphthalen-2-yl)ethanone Ethanone, 1- (1,2,3,4,5,6,7,8- octahydro-2,3,5,5- tetramethyl-2- naphthalenyl)- Naphthalene, 1,2,3,4,5,6,7,8-octahydro-2,3,5,5-tetramethyl-2-aceto 68155-66-8: 1-(1,2,3,5,6,7,8,8a-Octahydro-2,3,8,8-tetramethyl-2-naphthyl)ethan-1-one 1-(2,3,8,8-Tetramethyl-1,2,3,5,6,7,8,8a-octahydronaphthalen-2-yl)ethanone Ethanone, 1-(1,2,3,5,6,7,8,8a-octahydro-2,3,8,8-tetramethyl-2-naphthalenyl)- Decalene, 2-Aceto-2,3,8,8-Tetramethyl(1,2,3,5,6,7,8,8A-Octahydro)- 68155-67-9: 1-(1,2,3,4,6,7,8,8a-Octahydro-2,3,8,8-tetramethyl-2-naphthyl)ethan-1-one 1-(2,3,8,8-Tetramethyl-1,2,3,4,6,7,8,8a-octahydronaphthalen-2-yl)ethanone Ethanone, 1-(1,2,3,4,6,7,8,8a-octahydro-2,3,8,8-tetramethyl-2-naphthalenyl)- Decalene, 2-Aceto-2,3,8,8-Tetramethyl(1,2,3,4,6,7,8,8A-Octahydro)-		

1-(1,2,3,4,5,6,7,8 Octahydro-2,3,8,8-tetramethyl-2-naphthalenyl) ethanone (OTNE)

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2008

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	RESTRICTION

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.41 %	Category 7A	0.67 %
Category 2	1.1 %	Category 7B	0.67 %
Category 3	0.41 %	Category 8	0.19 %
Category 4	20 %	Category 9	2.4 %
Category 5A	5.1 %	Category 10A	2.4 %
Category 5B	0.56 %	Category 10B	6.6 %
Category 5C	0.76 %	Category 11A	0.19 %
Category 5D	0.19 %	Category 11B	0.19 %
Category 6	0.0093 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of

1-(1,2,3,4,5,6,7,8 Octahydro-2,3,8,8-tetramethyl-2-naphthalenyl) ethanone (OTNE)

	Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 1-(1,2,3,4,5,6,7,8 Octahydro-2,3,8,8-tetramethyl-2-naphthalenyl) ethanone (OTNE), which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 1-(1,2,3,4,5,6,7,8 Octahydro-2,3,8,8-tetramethyl-2-naphthalenyl) ethanone (OTNE) and recommends the limits for the 12 different product categories, which are the acceptable use levels of 1-(1,2,3,4,5,6,7,8 Octahydro-2,3,8,8-tetramethyl-2-naphthalenyl) ethanone (OTNE) in the various product categories.

REFERENCES:

The IFRA Standard on 1-(1,2,3,4,5,6,7,8 Octahydro-2,3,8,8-tetramethyl-2-naphthalenyl) ethanone (OTNE) is based on at least one of the following publications:

- The RIFM Safety Assessment on 1-(1,2,3,4,5,6,7,8 Octahydro-2,3,8,8-tetramethyl-2-

1-(1,2,3,4,5,6,7,8 Octahydro-2,3,8,8-tetramethyl-2-naphthalenyl) ethanone (OTNE)

naphthalenyl) ethanone (OTNE) if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

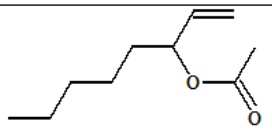
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

1-Octen-3-yl acetate

CAS-No.:	2442-10-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{10}H_{18}O_2$
		Structure:	
Synonyms:	3-Acetoxyoctene Amyl crotonyl acetate Amyl vinyl carbinyl acetate 1-Octen-3-ol, acetate Octenyl acetate β-Octenyl acetate n-Pentyl vinyl carbinol acetate		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1989 1994 2007 2008

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.27 %	Category 7A	3.1 %
Category 2	0.080 %	Category 7B	3.1 %
Category 3	1.6 %	Category 8	0.16 %
Category 4	1.5 %	Category 9	2.9 %

1-Octen-3-yl acetate

Category 5A	0.38 %	Category 10A	11 %
Category 5B	0.38 %	Category 10B	11 %
Category 5C	0.38 %	Category 11A	5.8 %
Category 5D	0.38 %	Category 11B	5.8 %
Category 6	0.88 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX I**

ANNEX I

Natural Complex Substances (NCS) containing 1-Octen-3-yl acetate

Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
0.3	2442-10-6	Bay leaf, West Indian, oil	Pimenta racemosa (Mill.) J.W. Moore	8006-78-8	E2.12
0.2	2442-10-6	Lavandin abrialis oil	Lavandula x intermedia abrialis	8022-15-9	F2.12
0.2	2442-10-6	Lavandin absolute	Lavandula officinalis x Lavandula latifolia	8022-15-9	F2.1
0.2	2442-10-6	Lavandin concrete	Lavandula officinalis x Lavandula latifolia	8022-15-9	F2.7
0.3	2442-10-6	Lavandin grosso oil	Lavandula officinalis x Lavandula latifolia	8022-15-9	F2.12
0.3	2442-10-6	Lavandin oil	Lavandula officinalis x Lavandula latifolia	8022-15-9	F2.12
0.7	2442-10-6	Lavender absolute	Lavandula angustifolia angustifolia	8000-28-0	F2.1

1-Octen-3-yl acetate

0.5	2442-10-6	Lavender concrete	Lavandula angustifolia angustifolia	8000-28-0	F2.7
0.9	2442-10-6	Lavender oil	Lavandula angustifolia angustifolia	8000-28-0	F2.12
0.3	2442-10-6	Lavendin super oil	Lavendula super	93685-88-2	F2.12
0.5	2442-10-6	Mentha citrata oil	Mentha citrata Ehrhart	68917-15-7	E2.12
0.06	2442-10-6	Spearmint oil	Mentha spicata L.	8008-79-5	E2.12
0.06	2442-10-6	Spearmint, Mentha spicata crispa, extract	Mentha spicata L. spicata	8008-79-5	E2.13

This is a non-exhaustive indicative list of typical natural presence for 1-Octen-3-yl acetate and is intended to be used in the absence of own analytical data. If analysis has shown that the level of the restricted ingredient in a natural complex substance is different from what is provided in this Annex I, then the analytically determined level should be used in place of the indicative level.
It should further be noted that natural complex substances themselves can be restricted by an IFRA Standard.
For a detailed list of natural contributions, please refer to the Annex I of IFRA Standards, publicly available on the IFRA website (www.ifrafragrance.org).

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 1-Octen-3-yl acetate, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 1-Octen-3-yl acetate and recommends the limits for the 12 different product categories, which are the acceptable use levels of 1-Octen-3-yl acetate in the various product categories.

REFERENCES:

1-Octen-3-yl acetate

The IFRA Standard on 1-Octen-3-yl acetate is based on at least one of the following publications:

• The RIFM Safety Assessment on 1-Octen-3-yl acetate if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Esters of 2-Octynoic acid (except Methyl heptine carbonate)

CAS-No.:	e.g.: 10484-32-9 10519-20-7 This IFRA Standard covers CAS numbers of any esters of 2-Octynoic acid (except Methyl heptine carbonate, CAS number 111-12-6).	**Molecular formula:**	Not applicable.
Synonyms:	10484-32-9: Amyl heptine carbonate 2-Octynoic acid, pentyl ester Pentyl 2-octynoic acid Vert de violette 10519-20-7: Ethyl heptine carbonate Ethyl 2-octynoate 2-Octynoic acid, ethyl ester		

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Esters of 2-Octynoic acid (except Methyl heptine carbonate) should not be used as a fragrance ingredient. For Methyl heptine carbonate (CAS number 111-12-6), please refer to the IFRA Restricted Standard Methyl heptine carbonate.

Esters of 2-Octynoic acid (except Methyl heptine carbonate)

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**INSUFFICIENT DATA**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Esters of 2-Octynoic acid (except Methyl heptine carbonate) and recommends not to use Esters of 2-Octynoic acid (except Methyl heptine carbonate) as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:

The IFRA Standard on Esters of 2-Octynoic acid (except Methyl heptine carbonate) is based on at least one of the following publications:

• The RIFM Safety Assessment on Esters of 2-Octynoic acid (except Methyl heptine carbonate) if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials

Esters of 2-Octynoic acid (except Methyl heptine carbonate)

for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Opoponax

CAS-No.:	8021-36-1 9000-78-6 93384-32-8 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	Not applicable.
Synonyms:	Opoponax (absolute, resinoid, oil, gum, tincture) Bisabol-myrrh Sweet myrrh Opoponax chironium (L.) W.D.J. Koch Commiphora erythraea Engler var. glabrescens (Burseraceae)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1978 1994 2013

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION / SPECIFICATION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.077 %	Category 7A	0.88 %
Category 2	0.023 %	Category 7B	0.88 %
Category 3	0.46 %	Category 8	0.045 %
Category 4	0.43 %	Category 9	0.84 %
Category 5A	0.11 %	Category 10A	3.0 %

Opoponax

Category 5B	0.11 %	Category 10B	3.0 %
Category 5C	0.11 %	Category 11A	1.7 %
Category 5D	0.11 %	Category 11B	1.7 %
Category 6	0.25 %	Category 12	No Restriction

FRAGRANCE INGREDIENT SPECIFICATION:	Opoponax oil can be obtained from solvent extraction or pyrolysis. Opoponax oil obtained through pyrolysis shall be rectified according to Good Manufacturing Practices (GMP) and the content of Polycyclic Aromatic Hydrocarbons (PAH) resulting from their use shall respect the following requirement: Benzopyrene and 1,2-Benzanthracene are to be used as markers for PAH. If used alone or in combination with rectified Cade oil, rectified Birch tar oils or rectified Styrax oil, the total concentration of both of the markers should not exceed 1 ppb in the final product.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Opoponax

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Opoponax, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Opoponax and recommends the limits for the 12 different product categories, which are the acceptable use levels of Opoponax in the various product categories.
In addition, they recommend to use Opoponax according to the specification above mentioned.

REFERENCES:

The IFRA Standard on Opoponax is based on at least one of the following publications:

• The RIFM Safety Assessment on Opoponax if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

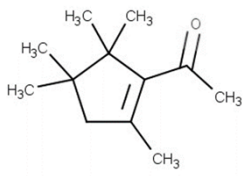
• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308

Opoponax

(https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

1-(2,4,4,5,5-Pentamethyl-1-cyclopenten-1-yl)ethan-1-one

CAS-No.:	13144-88-2 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{12}H_{20}O$
		Structure:	
Synonyms:	2-Acetyl-1,3,3,4,4-pentamethyl-1-cyclopentene Ethanone, 1-(2,4,4,5,5-pentamethyl-1-cyclopenten-1-yl)- 1-(2,4,4,5,5-Pentamethylcyclopent-1-en-1-yl)ethanone Alpinone (commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2011

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.077 %	Category 7A	0.88 %
Category 2	0.023 %	Category 7B	0.88 %
Category 3	0.46 %	Category 8	0.045 %
Category 4	0.43 %	Category 9	0.84 %
Category 5A	0.11 %	Category 10A	3.0 %

1-(2,4,4,5,5-Pentamethyl-1-cyclopenten-1-yl)ethan-1-one

Category 5B	0.11 %	Category 10B	3.0 %
Category 5C	0.11 %	Category 11A	1.7 %
Category 5D	0.11 %	Category 11B	1.7 %
Category 6	0.25 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

1-(2,4,4,5,5-Pentamethyl-1-cyclopenten-1-yl)ethan-1-one

Additional information is available in the RIFM safety assessment for 1-(2,4,4,5,5-Pentamethyl-1-cyclopenten-1-yl)ethan-1-one, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 1-(2,4,4,5,5-Pentamethyl-1-cyclopenten-1-yl)ethan-1-one and recommends the limits for the 12 different product categories, which are the acceptable use levels of 1-(2,4,4,5,5-Pentamethyl-1-cyclopenten-1-yl)ethan-1-one in the various product categories.

REFERENCES:

The IFRA Standard on 1-(2,4,4,5,5-Pentamethyl-1-cyclopenten-1-yl)ethan-1-one is based on at least one of the following publications:

• The RIFM Safety Assessment on 1-(2,4,4,5,5-Pentamethyl-1-cyclopenten-1-yl)ethan-1-one if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

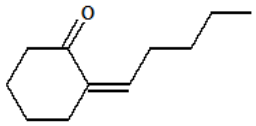
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

2-Pentylidene cyclohexanone

CAS-No.:	25677-40-1 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{11}H_{18}O$
		Structure:	
Synonyms:	Cyclohexanone, 2-pentylidene-		

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1979 1983 2002

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	2-Pentylidene cyclohexanone should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

2-Pentylidene cyclohexanone

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 2-Pentylidene cyclohexanone and recommends not to use 2-Pentylidene cyclohexanone as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on 2-Pentylidene cyclohexanone is based on at least one of the following publications:

• The RIFM Safety Assessment on 2-Pentylidene cyclohexanone is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

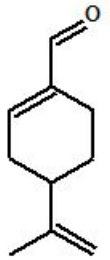
• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Opdyke, D.L.J. and Letizia, C. (1982), Food and Chemical Toxicology, 20, 797.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Perilla aldehyde

CAS-No.:	2111-75-3 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{10}H_{14}O$
		Structure:	
Synonyms:	1-Cyclohexene-1-carboxaldehyde, 4-(1-methylethenyl)- 4-Isopropenylcyclohex-1-ene-1-carbaldehyde 4-Isopropenyl-1-cyclohexene-1-carboxaldehyde Dihydrocuminic aldehyde p-Mentha-1,8-dien-7-al Perillaldehyde		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1979 1994 2013

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.054 %	Category 7A	0.61 %
Category 2	0.016 %	Category 7B	0.61 %
Category 3	0.32 %	Category 8	0.032 %
Category 4	0.30 %	Category 9	0.59 %

Perilla aldehyde

Category 5A	0.076 %	Category 10A	2.1 %
Category 5B	0.076 %	Category 10B	2.1 %
Category 5C	0.076 %	Category 11A	1.2 %
Category 5D	0.076 %	Category 11B	1.2 %
Category 6	0.18 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX I**

ANNEX I

Natural Complex Substances (NCS) containing Perilla aldehyde

Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
0.1	2111-75-3	Caraway seed oil	Carum carvi L.	8000-42-8	H2.12
0.2	2111-75-3	Gingergrass oil	Cymbopogon winterianus Jowitt	8023-92-5	E2.12
1	2111-75-3	Grapefruit oil, terpeneless	Citrus paradisi Macf.	68916-46-1	G2.29
0.3	2111-75-3	Lime oil, terpeneless	Citrus aurantifolia (Swingle)	68916-84-7	G2.29
0.2	2111-75-3	Lime oil. folded (2-5X)	Citrus aurantifolia (Swingle)	8008-26-2	G2.6
0.02	2111-75-3	Orange oil, bitter	Citrus aurantium L. spp. Amara Link	68916-04-1	G2.5
1.5	2111-75-3	Orange peel oil, sweet terpeneless	Citrus sinensis (L.) Osbeck	68606-94-0	G2.29
1	2111-75-3	Orange sweet oil folded	Citrus sinensis (L.) Osbeck	8008-57-9	G2.6

Perilla aldehyde

60	2111-75-3	Perilla oil	Perilla frutescens (L.) Britton	68132-21-8	E2.12

This is a non-exhaustive indicative list of typical natural presence for Perilla aldehyde and is intended to be used in the absence of own analytical data. If analysis has shown that the level of the restricted ingredient in a natural complex substance is different from what is provided in this Annex I, then the analytically determined level should be used in place of the indicative level.
It should further be noted that natural complex substances themselves can be restricted by an IFRA Standard.
For a detailed list of natural contributions, please refer to the Annex I of IFRA Standards, publicly available on the IFRA website (www.ifrafragrance.org).

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Perilla aldehyde, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Perilla aldehyde and recommends the limits for the 12 different product categories, which are the acceptable use levels of Perilla aldehyde in the various product categories.

REFERENCES:

The IFRA Standard on Perilla aldehyde is based on at least one of the following publications:

• The RIFM Safety Assessment on Perilla aldehyde if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.p

Perilla aldehyde

df).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Peru balsam

CAS-No.:	8007-00-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	Not applicable.
Synonyms:	Prohibition of Peru balsam crude: Exudation of Myroxylon pereirae Klotsch Restriction of Peru balsam extracts and distillates: Balsam oil, Peru (Myroxylon pereirae Klotzsch) Myroxylon pereirae (Balsam Peru) oil Myroxylon pereirae (Balsam Peru) resin Myroxylon pereirae oil Peru balsam absolute Peru balsam anhydrol		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1974 1991 2007 2008

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION / PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Peru balsam crude should not be used as a fragrance ingredient for any finished product application.

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):

Peru balsam

Category 1	0.073 %	Category 7A	0.83 %
Category 2	0.022 %	Category 7B	0.83 %
Category 3	0.44 %	Category 8	0.034 %
Category 4	0.41 %	Category 9	0.80 %
Category 5A	0.10 %	Category 10A	0.80 %
Category 5B	0.10 %	Category 10B	2.9 %
Category 5C	0.10 %	Category 11A	0.034 %
Category 5D	0.034 %	Category 11B	0.034 %
Category 6	0.24 %	Category 12	No Restriction

Fragrance ingredient restriction - Note box

The restriction only applies to Peru balsam extracts and distillates (Peru balsam oil, absolute and anhydrol).

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK	**DERMAL SENSITIZATION AND SYSTEMIC**

Peru balsam

MANAGEMENT:	TOXICITY

RIFM SUMMARIES:

Recommended concentration levels of Peru balsam extracts and distillates are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.
Additional information is available in the RIFM safety assessment for Peru balsam extracts and distillates, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Peru balsam extracts and distillates and recommends the limits for the 12 different product categories, which provide the acceptable use levels of Peru balsam extracts and distillates in the various product categories.
In addition, they recommend not to use Peru balsam crude in any finished product application.

REFERENCES:

The IFRA Standard on Peru balsam is based on at least one of the following publications:

• The RIFM Safety Assessment on Peru balsam if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

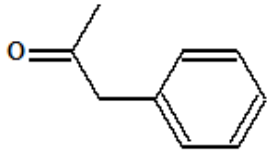
• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Peru balsam

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Phenyl acetone

CAS-No.:	103-79-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_9H_{10}O$
		Structure:	
Synonyms:	Benzyl methyl ketone Methyl benzyl ketone 2-Propanone, 1-phenyl		

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Phenyl acetone should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Phenyl acetone

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**INSUFFICIENT DATA**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Phenyl acetone and recommends not to use Phenyl acetone as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:

The IFRA Standard on Phenyl acetone is based on at least one of the following publications:

• The RIFM Safety Assessment on Phenyl acetone if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

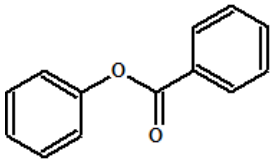
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Phenyl benzoate

CAS-No.:	93-99-2 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{13}H_{10}O_2$
		Structure:	
Synonyms:	Benzoic acid, phenyl ester		

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Phenyl benzoate should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Phenyl benzoate

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**INSUFFICIENT DATA**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Phenyl benzoate and recommends not to use Phenyl benzoate as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:

The IFRA Standard on Phenyl benzoate is based on at least one of the following publications:

• The RIFM Safety Assessment on Phenyl benzoate if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

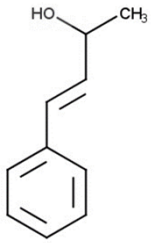
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

4-Phenyl-3-buten-2-ol

CAS-No.:	17488-65-2 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{10}H_{12}O$
		Structure:	
Synonyms:	3-Buten-2-ol, 4-phenyl- 4-Phenylbut-3-en-2-ol Methyl styryl carbinol		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.22 %	Category 7A	2.5 %
Category 2	0.066 %	Category 7B	2.5 %
Category 3	1.3 %	Category 8	0.13 %
Category 4	1.2 %	Category 9	2.4 %
Category 5A	0.32 %	Category 10A	8.7 %
Category 5B	0.32 %	Category 10B	8.7 %

4-Phenyl-3-buten-2-ol

Category 5C	0.32 %	Category 11A	4.8 %
Category 5D	0.32 %	Category 11B	4.8 %
Category 6	0.73 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

4-Phenyl-3-buten-2-ol has been found in natural extracts but only at trace levels.

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 4-Phenyl-3-buten-2-ol,

4-Phenyl-3-buten-2-ol

which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 4-Phenyl-3-buten-2-ol and recommends the limits for the 12 different product categories, which are the acceptable use levels of 4-Phenyl-3-buten-2-ol in the various product categories.

REFERENCES:

The IFRA Standard on 4-Phenyl-3-buten-2-ol is based on at least one of the following publications:

• The RIFM Safety Assessment on 4-Phenyl-3-buten-2-ol if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

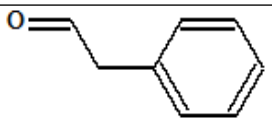
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Phenylacetaldehyde

CAS-No.:	122-78-1 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	C_8H_8O
		Structure:	
Synonyms:	Benzeneacetaldehyde Benzylcarboxaldehyde Hyacinthin 1-Oxo-2-phenylethane α-Tolualdehyde α-Toluic aldehyde Phenylacetic aldehyde Phenyl acetic aldehyde (pure) (commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1975 1980 2006

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.045 %	Category 7A	0.52 %
Category 2	0.014 %	Category 7B	0.52 %
Category 3	0.27 %	Category 8	0.021 %
Category 4	0.25 %	Category 9	0.49 %

Phenylacetaldehyde

Category 5A	0.064 %	Category 10A	0.49 %
Category 5B	0.064 %	Category 10B	1.8 %
Category 5C	0.064 %	Category 11A	0.021 %
Category 5D	0.021 %	Category 11B	0.021 %
Category 6	0.15 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to

Phenylacetaldehyde

the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Phenylacetaldehyde, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Phenylacetaldehyde and recommends the limits for the 12 different product categories, which are the acceptable use levels of Phenylacetaldehyde in the various product categories.

REFERENCES:

The IFRA Standard on Phenylacetaldehyde is based on at least one of the following publications:

• The RIFM Safety Assessment on Phenylacetaldehyde if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

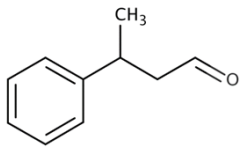
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

3-Phenylbutanal

CAS-No.:	16251-77-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{10}H_{12}O$
		Structure:	
Synonyms:	Benzenepropanal, β-methyl- 3-Phenylbutyraldehyde 3-Phenyl-3-methylpropanal Trifernal (commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2010

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.17 %	Category 7A	0.023 %
Category 2	0.069 %	Category 7B	0.023 %
Category 3	0.023 %	Category 8	0.0076 %
Category 4	0.44 %	Category 9	0.080 %
Category 5A	0.24 %	Category 10A	0.080 %

3-Phenylbutanal

Category 5B	0.023 %	Category 10B	0.36 %
Category 5C	0.034 %	Category 11A	0.0076 %
Category 5D	0.0076 %	Category 11B	0.0076 %
Category 6	0.011 %	Category 12	9.6 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

3-Phenylbutanal

Additional information is available in the RIFM safety assessment for 3-Phenylbutanal, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 3-Phenylbutanal and recommends the limits for the 12 different product categories, which are the acceptable use levels of 3-Phenylbutanal in the various product categories.

REFERENCES:

The IFRA Standard on 3-Phenylbutanal is based on at least one of the following publications:

• The RIFM Safety Assessment on 3-Phenylbutanal if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

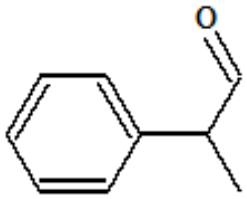
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

2-Phenylpropionaldehyde

CAS-No.:	93-53-8 1340-11-0 34713-70-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_9H_{10}O$
		Structure:	
Synonyms:	Benzeneacetaldehyde, α-methyl- Hydratropaldehyde α-Methylphenylacetaldehyde α-Methyltolualdehyde 2-Phenylpropanal α-Phenylpropionaldehyde (R)-2-Phenylpropionaldehyde (S)-2-Phenylpropionaldehyde Hydratropic aldehyde (commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2009

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.029 %	Category 7A	0.19 %
Category 2	0.0087 %	Category 7B	0.19 %
Category 3	0.096 %	Category 8	0.014 %

2-Phenylpropionaldehyde

Category 4	0.16 %	Category 9	0.32 %
Category 5A	0.041 %	Category 10A	0.32 %
Category 5B	0.041 %	Category 10B	0.77 %
Category 5C	0.041 %	Category 11A	0.014 %
Category 5D	0.014 %	Category 11B	0.014 %
Category 6	0.096 %	Category 12	31 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is

2-Phenylpropionaldehyde

derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 2-Phenylpropionaldehyde, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 2-Phenylpropionaldehyde and recommends the limits for the 12 different product categories, which are the acceptable use levels of 2-Phenylpropionaldehyde in the various product categories.

REFERENCES:

The IFRA Standard on 2-Phenylpropionaldehyde is based on at least one of the following publications:

• The RIFM Safety Assessment on 2-Phenylpropionaldehyde if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Pinacea derivatives

CAS-No.:	Not applicable. The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.	**Molecular formula:**	Not applicable.
Synonyms:	Derivatives from the Pine Family		

History:	Publication date:	1994 (Amendment 28)	Previous Publications:	1976

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**SPECIFICATION**

FRAGRANCE INGREDIENT SPECIFICATION:	Essential oils (e.g. Turpentine oil) and isolates (e.g. delta-3-Carene) derived from the Pinacea family, including Pinus and Abies genera, should only be used when the level of peroxides is kept to the lowest practicable level, for instance by adding antioxidants at the time of production. Such products should have a peroxide value of less than 10 millimoles peroxide per liter, determined according to the IFRA analytical methodology for the determination of the peroxide value, which can be downloaded from the IFRA

Pinacea derivatives

	website (www.ifrafragrance.org).

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE FRAGRANCE MATERIAL SPECIFICATION**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Pinacea derivatives. Based on their expert judgement, they recommend to use the fragrance ingredient according to its specification mentioned above.

REFERENCES:

The IFRA Standard on Pinacea derivatives is based on at least one of the following publications:

• The RIFM Safety Assessment on Pinacea derivatives is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

Pinacea derivatives

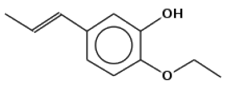
• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Fd. Cosmet. Toxicol. 11, 1053 (1973); 16, 843 (1978);16, 853 (1978).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Propenylguaethol

CAS-No.:	94-86-0 63477-41-8 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{11}H_{14}O_2$
		Structure:	
Synonyms:	1-Ethoxy-2-hydroxy-4-propenylbenzene 2-Ethoxy-5-prop-1-en-1-ylphenol 2-Ethoxy-5-propenylphenol 3-Propenyl-6-ethoxyphenol 6-Ethoxy-m-anol Phenol, 2-ethoxy-5-(1-propenyl)- Vanitrope (commercial name) Isosafroeugenol (commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.18 %	Category 7A	0.32 %
Category 2	0.053 %	Category 7B	0.32 %
Category 3	0.11 %	Category 8	0.071 %
Category 4	0.99 %	Category 9	0.75 %

Propenylguaethol

Category 5A	0.25 %	Category 10A	0.75 %
Category 5B	0.21 %	Category 10B	3.7 %
Category 5C	0.25 %	Category 11A	0.071 %
Category 5D	0.071 %	Category 11B	0.071 %
Category 6	0.58 %	Category 12	58 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to

Propenylguaethol

the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Propenylguaethol, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Propenylguaethol and recommends the limits for the 12 different product categories, which are the acceptable use levels of Propenylguaethol in the various product categories.

REFERENCES:

The IFRA Standard on Propenylguaethol is based on at least one of the following publications:

• The RIFM Safety Assessment on Propenylguaethol if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

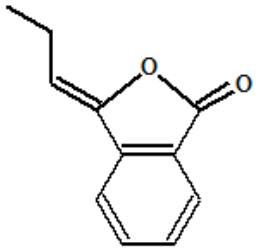
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

3-Propylidenephthalide

CAS-No.:	17369-59-4 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{11}H_{10}O_2$
		Structure:	
Synonyms:	1(3H)-Isobenzofuranone, 3-propylidene- 3-Propylidene-2-benzofuran-1(3H)-one Propylidene phthalide		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1977 1994 2008

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.071 %	Category 7A	0.81 %
Category 2	0.021 %	Category 7B	0.81 %
Category 3	0.42 %	Category 8	0.041 %
Category 4	0.40 %	Category 9	0.77 %
Category 5A	0.10 %	Category 10A	2.8 %
Category 5B	0.10 %	Category 10B	2.8 %

3-Propylidenephthalide

Category 5C	0.10 %	Category 11A	1.5 %
Category 5D	0.10 %	Category 11B	1.5 %
Category 6	0.23 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX I**

ANNEX I

Natural Complex Substances (NCS) containing 3-Propylidenephthalide

Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
0.1	17369-59-4	Lovage root oil	Levisticum officinale Koch	8016-31-7	A2.12

This is a non-exhaustive indicative list of typical natural presence for 3-Propylidenephthalide and is intended to be used in the absence of own analytical data. If analysis has shown that the level of the restricted ingredient in a natural complex substance is different from what is provided in this Annex I, then the analytically determined level should be used in place of the indicative level.
It should further be noted that natural complex substances themselves can be restricted by an IFRA Standard.
For a detailed list of natural contributions, please refer to the Annex I of IFRA Standards, publicly available on the IFRA website (www.ifrafragrance.org).

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one

3-Propylidenephthalide

endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 3-Propylidenephthalide, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 3-Propylidenephthalide and recommends the limits for the 12 different product categories, which are the acceptable use levels of 3-Propylidenephthalide in the various product categories.

REFERENCES:

The IFRA Standard on 3-Propylidenephthalide is based on at least one of the following publications:

• The RIFM Safety Assessment on 3-Propylidenephthalide if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Pseudo methylionones

CAS-No.:	26651-96-7 72968-25-3 1117-41-5 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.	**Molecular formula:**	$C_{14}H_{22}O$
Synonyms:	2,6-Dimethyldodeca-2,6,8-trien-10-one 7,11-Dimethyl-4,6,10-dodecatrien-3-one 7,11-Dimethyldodeca-4,6,10-trien-3-one 4,6,10-Dodecatrien-3-one, 7,11-dimethyl- 3,6,10-Trimethylundeca-3,5,9-trien-2-one		

History:	Publication date:	2009 (Amendment 44)	Previous Publications:	1979 1989 2002 2006

Implementation dates:	For new submissions*:	August 7, 2009
	For existing fragrance compounds*:	August 7, 2010
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION / SPECIFICATION**

FRAGRANCE INGREDIENT PROHIBITION:	Pseudo methylionones should not be used as a fragrance ingredient.

FRAGRANCE INGREDIENT SPECIFICATION:	Pseudo methylionones should not be used as fragrance ingredient as such, but a level of up to 2% as an impurity in Methylionones is

Pseudo methylionones

	accepted.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Pseudo methylionones and recommends not to use Pseudo methylionones as or in fragrance ingredients in any finished product application other than described in the above fragrance ingredient specification.

REFERENCES:

The IFRA Standard on Pseudo methylionones is based on at least one of the following publications:

• The RIFM Safety Assessment on Pseudo methylionones is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials

Pseudo methylionones

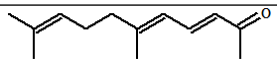
for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Opdyke, D.L.J. (1975), Food and Cosmetics Toxicology 13, 863.

• Ford R.A. et al. (1988), Food and Chemical Toxicology 26, 305 and 413.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Pseudoionone

CAS-No.:	141-10-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{13}H_{20}O$
		Structure:	
Synonyms:	Citrylideneacetone 2,6-Dimethylundeca-2,6,8-trien-10-one 6,10-Dimethyl-3,5,9-undecatrien-2-one 3,5,9-Undecatrien-2-one, 6,10-dimethyl-		

History:	Publication date:	2006 (Amendment 40)	Previous Publications:	1979 1987 1989

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION / SPECIFICATION**

FRAGRANCE INGREDIENT PROHIBITION:	Pseudoionone should not be used as a fragrance ingredient.

FRAGRANCE INGREDIENT SPECIFICATION:	Pseudoionone should not be used as fragrance ingredient as such, but a level of up to 2% as an impurity in Ionones is accepted.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE**

Pseudoionone

	SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Pseudoionone and recommends not to use Pseudoionone as or in fragrance ingredients in any finished product application other than described in the above fragrance ingredient specification.

REFERENCES:

The IFRA Standard on Pseudoionone is based on at least one of the following publications:

• The RIFM Safety Assessment on Pseudoionone is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

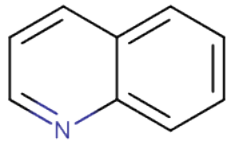
• Opdyke D.L.J. (1975), Food and Cosmetics Toxicology 13, 549.

• Ford R.A. et al. (1988), Food and Chemical Toxicology 26, 311.

Pseudoionone

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Quinoline

CAS-No.:	91-22-5 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	C_9H_7N
		Structure:	
Synonyms:	1-Benzazine 2,3-Benzopyridine Benzo(b)pyridine Chinoleine Leucoline Quinoleine		

History:	Publication date:	2010 (Amendment 45)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	August 11, 2010
	For existing fragrance compounds*:	August 11, 2011
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Quinoline should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM**

Quinoline

	OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**CARCINOGENICITY, MUTAGENICITY**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Quinoline and recommends not to use Quinoline as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Quinoline is based on at least one of the following publications:

• The RIFM Safety Assessment on Quinoline is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Commission Directive 2009/2/EC (31st ATP to Directive 67/548/EEC).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Rose ketones

CAS-No.:	23696-85-7 23726-93-4 59739-63-8 43052-87-5 24720-09-0 23726-94-5 23726-92-3 23726-91-2 35044-68-9 57378-68-4 71048-82-3 35087-49-1 39872-57-6 70266-48-7 33673-71-1 87064-19-5 The scope of the Standard covers but is not limited to the list of CAS numbers enumerated above (including all their geometric isomers).	**Molecular formula:**	$C_{13}H_{18}O$ $C_{13}H_{20}O$
Synonyms:	23696-85-7 (C13H18O): 1-(2,6,6-Trimethylcyclohexa-1,3-dienyl)-2-buten-1-one 2-Buten-1-one, 1-(2,6,6-trimethyl-1,3-cyclohexadien-1-yl) Damascenone (commercial name) Floriffone (commercial name) Doricenone (commercial name) 23726-93-4 (C13H18O): (E)-1-(2,6,6-Trimethyl-1,3-cyclohexadien-1-yl)-2-buten-1-one trans-1-(2,6,6-Trimethyl-1,3-cyclohexadien-1-yl)-2-buten-1-one 2-Buten-1-one, 1-(2,6,6-trimethyl-1,3-cyclohexadien-1-yl)- (2E)- β-Damascenone 59739-63-8 (C13H18O): (2Z)-1-(2,6,6-trimethyl-1,3-cyclohexadien-1-yl)-2-Buten-1-one (Z)-β-Damascenone cis-Damascenone 2-Buten-1-one, 1-(2,6,6-trimethyl-1,3-cyclohexadien-1-y1)-, (Z)- 43052-87-5 (C13H20O): α-1-(2,6,6-Trimethyl-2-cyclohexen-1-yl)-2-buten-1-one 2-Buten-1-one, 1-(2,6,6-trimethyl-2-cyclohexen-1-yl)- α-Damascone (commercial name) Dihydrofloriffone α (commercial name) 24720-09-0 (C13H20O): (E)-1-(2,6,6-Trimethyl-2-cyclohexen-1-yl)-2-buten-1-one		

Rose ketones

	trans-1-(2,6,6-Trimethyl-2-cyclohexen-1-yl)but-2-en-1-one 2-Buten-1-one, 1-(2,6,6-trimethyl-2-cyclohexen-1-yl)-, (2E)- trans-α-Damascone Damascone alpha (commercial name) Dorinone (commercial name) 23726-94-5 (C13H20O): (Z)-1-(2,6,6-Trimethyl-2-cyclohexen-1-yl)-2-buten-1-one cis-1-(2,6,6-Trimethyl-2-cyclohexen-1-yl)-2-buten-1-one 2-Buten-1-one, 1-(2,6,6-trimethyl-2-cyclohexen-1-yl)-, (Z)- 1-(2,6,6-Trimethylcyclohex-2-en-1-yl)but-2-en-1-one cis-α-Damascone 23726-92-3 (C13H20O): 1-(2,6,6-Trimethylcyclohex-1-en-1-yl)but-2-en-1-one (Z)-β-1-(2,6,6-Trimethyl-1-cyclohexen-1-yl)-2-buten-1-one (Z)-1-(2,6,6-Trimethyl-1-cyclohexen-1-yl)-2-buten-1-one 2-Buten-1-one, 1-(2,6,6-trimethyl-1-cyclohexen-1-yl)-, (2Z)- cis-β-Damascone (commercial name) Damasione (commercial name) 23726-91-2 (C13H20O): (2E)-1-(2,6,6-Trimethyl-1-cyclohexen-1-yl)-2-buten-1-one (E)-1-(2,6,6-Trimethyl-1-cyclohexen-1-yl)-2-buten-1-one 1-(2,6,6-Trimethylcyclohex-1-en-1-yl)but-2-en-1-one trans-β-Damascone, Dihydrofloriffone β (commercial name) Dorinone beta (commercial name) 35044-68-9 (C13H20O): 2-Buten-1-one, 1-(2,6,6-trimethyl-1-cyclohexen-1-yl)- 2,6,6-Trimethyl-1-(2-butenoyl)-1-cyclohexene 2,6,6-Trimethyl-1-crotonoyl-1-cyclohexene 1-(2,6,6-Trimethylcyclohexenyl)-2-buten-1-one 1-(2,6,6-Trimethyl-1-cyclohexen-1-yl)-2-buten-1-one Damascone β- β-Damascone 57378-68-4 (C13H20O): δ-1-(2,6,6-Trimethyl-3-cyclohexen-1-yl)-2-buten-1-one 2-Buten-1-one, 1-(2,6,6-trimethyl-3-cyclohexen-1-yl)- 1-(2,6,6-Trimethyl-3-cyclohexen-1-yl)-2-buten-1-one δ-Damascone (commercial name) Dihydrofloriffone TD (commercial name) 71048-82-3 (C13H20O): [1α(E),2β]-1-(2,6,6-Trimethyl-3-cyclohexen-1-yl)-2-buten-1-one [1α(E),2β]-1-(2,6,6-Trimethylcyclohex-3-en-1-yl)but-2-en-1-one trans,trans-δ-Damascone trans δ Damascone (commercial name) 35087-49-1 (C13H20O): 1-(2,2-Dimethyl-6-methylenecyclohexyl)but-2-en-1-one

Rose ketones

	2-Buten-1-one, 1-(2,2-dimethyl-6-methylenecyclohexyl)- Damascone γ- γ-Damascone (commercial name) 39872-57-6 (C13H20O): 1-(2,4,4-Trimethyl-2-cyclohexen-1-yl)-2-buten-1-one (E)-1-(2,4,4-Trimethyl-2-cyclohexen-1-yl)-2-buten-1-one 2-Buten-1-one, 1-(2,4,4-trimethyl-2-cyclohexen-1-yl)-, (2E)- 2-Buten-1-one, 1-(2,4,4-trimethyl-2-cyclohexen-1-yl)-, (E)- (E)-α-Isodamascone Isodamascone (high α) (commercial name) 70266-48-7 (C13H20O): 1-(2,4,4-Trimethyl-1-cyclohexen-1-yl)-2-buten-1-one 2-Buten-1-one, 1-(2,4,4-trimethyl-1-cyclohexene-1-yl) Generic β-Isodamascone Isodamascone (standard quality) (commercial name) 33673-71-1 (C13H20O): 1-(2,4,4-Trimethylcyclohex-2-en-1-yl)but-2-en-1-one 1-(2,4,4-Trimethyl-2-cyclohexen-1-yl)-2-buten-1-one 2-Buten-1-one, 1-(2,4,4-trimethyl-2-cyclohexen-1-yl)- Isodamascone (isomer unspecified) Generic δ-Isodamascone 87064-19-5 (C13H20O): 2-Buten-1-one, 1-(2,4,4-trimethyl-2-cyclohexen-1-yl)-, (Z)- cis-Isodamascone (including all geometric isomers).

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1991 1995 2007 2008 2009

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

Rose ketones

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.0077 %	Category 7A	0.088 %
Category 2	0.0023 %	Category 7B	0.088 %
Category 3	0.046 %	Category 8	0.0045 %
Category 4	0.043 %	Category 9	0.084 %
Category 5A	0.011 %	Category 10A	0.30 %
Category 5B	0.011 %	Category 10B	0.30 %
Category 5C	0.011 %	Category 11A	0.17 %
Category 5D	0.011 %	Category 11B	0.17 %
Category 6	0.025 %	Category 12	No Restriction

Fragrance ingredient restriction - Note box
The above limits apply to Rose Ketones used individually or in combination. The sum of concentrations of Rose ketones isomers should not exceed the maximum concentration levels established by this Standard.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Rose ketones

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Rose ketones, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Rose ketones and recommends the limits for the 12 different product categories, which are the acceptable use levels of Rose ketones in the various product categories.

REFERENCES:

The IFRA Standard on Rose ketones is based on at least one of the following publications:

• The RIFM Safety Assessment on Rose ketones if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308

Rose ketones

(https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Rue oil

CAS-No.:	8014-29-7 84929-47-5 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	Not applicable.
Synonyms:	Not applicable.		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1974 1978 2001 2015

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.15 %	Category 7A	No Restriction
Category 2	0.15 %	Category 7B	0.15 %
Category 3	0.15 %	Category 8	0.15 %
Category 4	0.15 %	Category 9	No Restriction
Category 5A	0.15 %	Category 10A	No Restriction
Category 5B	0.15 %	Category 10B	0.15 %

Rue oil

Category 5C	0.15 %	Category 11A	No Restriction
Category 5D	0.15 %	Category 11B	0.15 %
Category 6	0.15 %	Category 12	No Restriction

Fragrance ingredient restriction - Note box

The Standard is set due to the phototoxic effects of Rue oil. For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the Guidance for the use of IFRA Standards.

If the level of furocoumarins is unknown, the restriction level specified in this IFRA Standard applies.

Combination effects of phototoxic ingredients are only taken into consideration for the furocoumarin-containing fragrance ingredients (extracts) listed in the IFRA Standard of Citrus oils and other furocoumarins containing essential oils.

If combinations of furocoumarin-containing phototoxic fragrance ingredients (extracts) are used, the use levels must be reduced accordingly. The sum of the concentrations of all furocoumarin-containing phototoxic fragrance ingredients (extracts), expressed in % of their recommended upper concentration level in the consumer product shall not exceed 100.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Rue oil

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	PHOTOTOXICITY

RIFM SUMMARIES:

This recommendation is based on the fact that Rue oil is known to contain psoralens and on the no-effect level of 0.8% found in hairless mice (P.D. Forbes, F. Urbach, R.E. Davis (1977), Fd. Cosmet. Toxicol. 15, 55-60 and communication from RIFM).

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Rue oil and recommends the limits for the 12 different product categories, which are the acceptable use levels of Rue oil in the various product categories.

REFERENCES:

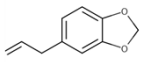
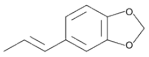
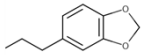
The IFRA Standard on Rue oil is based on at least one of the following publications:

• P.D. Forbes, F. Urbach, R.E. Davis (1977), Fd. Cosmet. Toxicol. 15, 55-60.

• IFRA Standard on Citrus oils and other furocoumarins containing essential oils.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Safrole, Isosafrole and Dihydrosafrole

CAS-No.:	94-59-7 120-58-1 94-58-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.	**Molecular formula:**	Not applicable.
		Structure:	CAS number 94-59-7:  CAS number 120-58-1:  CAS number 94-58-6: 
Synonyms:	94-59-7: 1,3-Benzodioxole, 5-(2-propenyl)- 3,4-Methylene dioxyallylbenzene 4-Allyl-1,2-methylene dioxybenzene 5-Allyl-1,3-benzodioxole Safrol 120-58-1: 1,2-Methylenedioxy-4-propenylbenzene 1,3-Benzodioxole, 5-(1-propenyl)- 5-Prop-1-en-1-yl-1,3-benzodioxole Iso-safrole 94-58-6: 1,3-Benzodioxole, 5-propyl- 3,4-Methylenedioxypropylbenzene 5-Propyl-1,3-benzodioxole		

History:	Publication date:	1987 (Amendment 17)	Previous Publications:	1976

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION / RESTRICTION**

Safrole, Isosafrole and Dihydrosafrole

FRAGRANCE INGREDIENT PROHIBITION:	Safrole, Isosafrole and/or Dihydrosafrole as such should not be used as fragrance ingredients. The natural extracts containing Safrole, Isosafrole and/or Dihydrosafrole should not be used as substitutes for these ingredients.

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	See notebox	Category 7A	See notebox
Category 2	See notebox	Category 7B	See notebox
Category 3	See notebox	Category 8	See notebox
Category 4	See notebox	Category 9	See notebox
Category 5A	See notebox	Category 10A	See notebox
Category 5B	See notebox	Category 10B	See notebox
Category 5C	See notebox	Category 11A	See notebox
Category 5D	See notebox	Category 11B	See notebox
Category 6	See notebox	Category 12	See notebox

Fragrance ingredient restriction - Note box

On the basis of established maximum concentration levels of this substance in commercially available natural sources (like essential oils, extracts and absolutes), exposure to this substance from the use of these oils and extracts is regarded acceptable as long as the total concentration of Safrole, Isosafrole and Dihydrosafrole in the finished consumer product does not exceed 0.01%.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA

Safrole, Isosafrole and Dihydrosafrole

	Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX I**

ANNEX I

Natural Complex Substances (NCS) containing Safrole, Isosafrole and Dihydrosafrole

Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
80	94-59-7	Camphor oil, brown	Cinnamomum camphora (L.) J.Presl	8008-51-3	D2.12
50	94-59-7	Camphor oil, yellow	Cinnamomum camphora (L.) J.Presl	8008-51-3	D2.12
0.2	94-59-7	Cinnamon bark oil	Cinnamomum zeylanicum Blume	8015-91-6	C2.12
1.2	94-59-7	Cinnamon leaf oil	Cinnamomum zeylanicum Blume	8015-91-6	E2.12
0.05	94-59-7	Cubeb oil	Piper cubeba L. f.	8007-87-2	G2.12
0.05	94-59-7	Litsea cubeba oil	Litsea Cubeba(Lour.) Pers.	68855-99-2	G2.12
1.7	94-59-7	Mace oil	Myristica fragrans Houtt.	8007-12-3	G2.12
1.6	94-59-7	Mace oleoresin	Myristica fragrans Houtt.	8007-12-3	G2.21
1.5	94-59-7	Nutmeg oil	Myristica fragrans Houtt.	8008-45-5	H2.12
1	94-59-7	Nutmeg oleoresin	Myristica fragrans Houtt.	8008-45-5	H2.21
92	94-59-7	Ocatea cymbarum oil	Ocotea cymbarum Kunth	68917-09-9	E2.12
0.03	94-59-7	Ravensara aromatica oil	Ravansara aromatica Sonn. (v. anisata)	91770-56-8	E2.12
92	94-59-7	Sassafras bark oil	Sassafras albidum (Nutt.) Nees	8006-80-2	C2.12

This is a non-exhaustive indicative list of typical natural presence for Safrole, Isosafrole and Dihydrosafrole and is intended to be used in the absence of own analytical data. If analysis has shown that the level of the restricted ingredient in a natural complex substance is different from what is provided in this Annex I, then the analytically determined level should be used in place of the indicative level.
It should further be noted that natural complex substances themselves can be restricted by an IFRA Standard.
For a detailed list of natural contributions, please refer to the Annex I of IFRA Standards, publicly available on the IFRA website (www.ifrafragrance.org).

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**CARCINOGENICITY**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

Safrole, Isosafrole and Dihydrosafrole

The Expert Panel for Fragrance Safety reviewed all the available data for Safrole, Isosafrole and Dihydrosafrole and recommends not to use Safrole, Isosafrole and Dihydrosafrole as or in fragrance ingredients in any finished product application.
However, the presence of Safrole, Isosafrole and Dihydrosafrole in natural extracts used as ingredients in finished consumer products is tolerated only according to the upper concentration level mentioned in the Notebox if the natural extracts are not being used to provide an alternative, indirect source of the banned substance.

REFERENCES:

The IFRA Standard on Safrole, Isosafrole and Dihydrosafrole is based on at least one of the following publications:

• The RIFM Safety Assessment on Safrole, Isosafrole and Dihydrosafrole is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014) (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Conclusions of the Scientific Committee on Cosmetology of the EEC on Safrole and on the similarity of the biological activity of these substances (Scientific Committee of Cosmetology of the EEC, opinion reached on September 2, 1980; Communication to the EEC Commission ENV/521/79 and IARC Monograph Vol. 10, 1976, 231-244).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Santolina oil

CAS-No.:	84961-58-0 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	Not applicable.
Synonyms:	Not applicable.		

History:	Publication date:	2008 (Amendment 43)	Previous Publications:	2006

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Santolina oil should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Santolina oil

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	INSUFFICIENT DATA

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Santolina oil and recommends not to use Santolina oil as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:

The IFRA Standard on Santolina oil is based on at least one of the following publications:

• The RIFM Safety Assessment on Santolina oil if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Savin oil

CAS-No.:	Prohibition of Savin oil: 8024-00-8 90046-04-1 Specification of Savin oil: 68916-94-9 90046-03-0 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	Not applicable.
Synonyms:	Prohibition of Savin oil: Juniperus sabina L. Specification of Savin oil: Juniperus phoenicea L.		

History:	Publication date:	1982 (Amendment 10)	Previous Publications:	1980

Implementation dates:	For new submissions*:	Not applicable.
	For existing fragrance compounds*:	Not applicable.
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION / SPECIFICATION**

FRAGRANCE INGREDIENT PROHIBITION:	Savin oil prepared from Juniperus sabina L. should not be used as a fragrance ingredient. Only oils obtained from Juniperus phoenicea L. should be used, under the conditions set in the fragrance ingredient specification mentioned below.

Savin oil

FRAGRANCE INGREDIENT SPECIFICATION:	In the absence of an international standard, the following specificiations for oils of Juniperus phoenicea L. are proposed: - Density d 20/20 0,864 - 0,873 - Refraction n 20 D 1,4700 - 1,4720 - Rotation alpha 20 D -1° - +4° - Acid value 0,4 - 1 - Ester value 2,5 - 7 - Ester value after acetylation 10 - 23 - Solubility 0.5-6 vol. in alcohol 96%, beyond that opalescence on dilution.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**ACUTE TOXICITY**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Savin oil and recommends not to use Savin oil (Juniperus sabina L.) as or in fragrance ingredients in any finished product application.
In addition, they recommend to use Savin oil (Juniperus phoenicea L.) according to the specification mentioned above.

REFERENCES:

The IFRA Standard on Savin oil is based on at least one of the following publications:

• The RIFM Safety Assessment on Savin oil is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

Savin oil

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

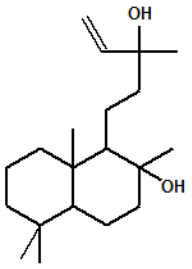
• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• R.E. Gosselin, H.C. Hodge, R.P. Smith & M.N. Gleason (1976), Clinical Toxicology of Commercial Products, 4th ed., Section II, p. 153, Williams & Wilkins Co., Baltimore.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Sclareol

CAS-No.:	515-03-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{20}H_{36}O_2$
		Structure:	
Synonyms:	Labd-14-ene-8,13-diol 1-Naphthalenepropanol,decahydro-alpha-ethenyl-2-hydroxy- alpha,2,5,5,8apentamethyl-, (1R-(1-alpha(R*),2-beta,4a-beta,8a-alpha))-		

History:	Publication date:	2005 (Amendment 39)	Previous Publications:	1986

Implementation dates:	For new submissions*:	November 12, 2005
	For existing fragrance compounds*:	November 12, 2006
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**SPECIFICATION**

FRAGRANCE INGREDIENT SPECIFICATION:	Sclareol used as a fragrance ingredient should have a minimum purity of 98%.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of

Sclareol

	Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Sclareol is found in natural extracts, but its natural contributions are not relevant for the fragrance ingredient specification mentioned above.

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Sclareol. Based on their expert judgement, they recommend to use the fragrance ingredient according to its specification mentioned above.

REFERENCES:

The IFRA Standard on Sclareol is based on at least one of the following publications:

• The RIFM Safety Assessment on Sclareol if available at the RIFM Safety Assessment Sheet Database:
http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014).
(http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

Sclareol

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Research Institute for Fragrance Materials, Inc. (1975a). Repeated Insult Patch Test with Sclareol. RIFM report number 45024, June 17. (RIFM, Woodcliff Lake, NJ, USA).

• Research Institute for Fragrance Materials, Inc. (1975b). Repeated Insult Patch Test with Sclareol. RIFM report number 45025, June 18. (RIFM, Woodcliff Lake, NJ, USA).

• Research Institute for Fragrance Materials, Inc. (1979a). Report on Human Maximization Studies. RIFM report number 1697, April 20. (RIFM, Woodcliff Lake, NJ, USA).

• Research Institute for Fragrance Materials, Inc. (1979b). Report on Human Maximization Studies. RIFM report number 1697, November 6. (RIFM, Woodcliff Lake, NJ, USA).

• Research Institute for Fragrance Materials, Inc. (1981). Report on Human Maximization Studies. RIFM report number 1792, March 18. (RIFM, Woodcliff Lake, NJ, USA).

• Research Institute for Fragrance Materials, Inc. (1986). Report on Human Maximization Studies. RIFM report number 3100, January 15. (RIFM, Woodcliff Lake, NJ, USA).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Styrax

CAS-No.:	8046-19-3 8024-01-9 94891-27-7 94891-28-8 101227-15-0 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	Not applicable.
Synonyms:	Prohibition of the crude material: Styrax crude gums Restriction and Specification of the distillates: Styrax resin Styrax oil Styrax oil, rectified Styrax oil, pyrogenated, distilled		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1977 1994 2013

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION / RESTRICTION / SPECIFICATION**

FRAGRANCE INGREDIENT PROHIBITION:	Crude gums of Liquidambar styraficula L. var. macrophylla or Liquidambar orientalis Mill. should not be used as fragrance ingredients for any finished product application.

Styrax

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.12 %	Category 7A	1.3 %
Category 2	0.034 %	Category 7B	1.3 %
Category 3	0.69 %	Category 8	0.068 %
Category 4	0.64 %	Category 9	1.3 %
Category 5A	0.16 %	Category 10A	4.5 %
Category 5B	0.16 %	Category 10B	4.5 %
Category 5C	0.16 %	Category 11A	2.5 %
Category 5D	0.16 %	Category 11B	2.5 %
Category 6	0.38 %	Category 12	No Restriction

Fragrance ingredient restriction - Note box
Only extracts or distillates (resinoids, absolutes and oils), prepared from exudations of Liquidambar styraciflua L. var. macrophylla or Liquidambar orientalis Mill., can be used.

FRAGRANCE INGREDIENT SPECIFICATION:	Styrax oil can be obtained from solvent extraction or pyrolysis. Styrax oil obtained through pyrolysis shall be rectified according to Good Manufacturing Practices (GMP) and the content of Polycyclic Aromatic Hydrocarbons (PAH) resulting from their use shall respect the following requirement: Benzopyrene and 1,2-Benzanthracene are to be used as markers for PAH. If used alone or in combination with rectified Cade oil, rectified Birch tar oils or rectified Opoponax oil, the total concentration of both of the markers should not exceed 1 ppb in the final product.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must

Styrax

	not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Styrax, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed data available for Styrax distillates and recommends the limits for the 12 different product categories, which are the acceptable use levels of Styrax distillates in the various product categories.
In addition, they recommend to use Styrax distillates according to the its specification above mentioned.

The Expert Panel for Fragrance Safety further recommends not to use Styrax crude in any finished product application.

Styrax

REFERENCES:

The IFRA Standard on Styrax is based on at least one of the following publications:

• The RIFM Safety Assessment on Styrax if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Tagetes oil and absolute

CAS-No.:	Prohibition of Tagetes erecta: 90131-43-4 8016-84-0 Restriction and Specification of Tagetes patula and Tagetes minuta: 91722-29-1 8016-84-0 91770-75-1 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.	**Molecular formula:**	Not applicable.
Synonyms:	Prohibition of Tagetes erecta: Tagetes erecta L. Restriction and Specification of Tagetes patula and Tagetes minuta: Tagetes absolute (Tagetes patula L.) Tagetes patula absolute Tagetes patula, ext. Tagetes minuta absolute Tagetes oil		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1986 2001 2015

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION / RESTRICTION / SPECIFICATION**

Tagetes oil and absolute

FRAGRANCE INGREDIENT PROHIBITION:	Tagetes erecta should not be used as a fragrance ingredient in any finished product application. Only Tagetes patula and Tagetes minuta should be used as fragrance ingredients according to the Restriction and Specification set in this Standard.

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.010 %	Category 7A	0.10 %
Category 2	0.010 %	Category 7B	0.010 %
Category 3	0.010 %	Category 8	0.010 %
Category 4	0.010 %	Category 9	0.10 %
Category 5A	0.010 %	Category 10A	0.10 %
Category 5B	0.010 %	Category 10B	0.010 %
Category 5C	0.010 %	Category 11A	No Restriction
Category 5D	0.010 %	Category 11B	0.010 %
Category 6	0.010 %	Category 12	No Restriction

Fragrance ingredient restriction - Note box

The Standard is set due to the phototoxic effects of Tagetes oil and absolute. For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the Guidance for the use of IFRA Standards.

The restriction only applies to Tagetes patula and Tagetes minuta.

FRAGRANCE INGREDIENT SPECIFICATION:	The content of alpha-Terthienyl (Terthiophene, CAS number 1081-34-1) in Tagetes patula and Tagetes minuta oils and absolutes must not exceed 0.35 %.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must

Tagetes oil and absolute

	not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**PHOTOTOXICITY**

RIFM SUMMARIES:

Tagetes oils and absolutes obtained from Tagetes minuta L. (syn. Tagetes glandulifera Schrank and Tagetes patula L.) were evaluated by RIFM (Letizia and Api, 2000).
A no effect level for phototoxicity of 0.05% was determined on humans using Egyptian Tagetes minuta (RIFM, 1986a).

The following studies have also been considered:
• At 0.003% in guinea pigs, no observable effects, 0/10 (RIFM, 1985a).
• At 0.01% in guinea pigs, phototoxicity observed, 8/10 (RIFM, 1985b).
• At 100% in mice, phototoxicity was observed, 6/6 (RIFM,1986b).
• At 1% in mice, phototoxicity was observed, 6/6 (RIFM, 1986c).
• At 0.1% in mice, phototoxicity was observed, 6/6 (RIFM, 1986c).
• At 0.01% in mice, phototoxicity was observed, 2/6 (RIFM, 1986c).

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Restriction and Specification of this Standard is based on the recommendations from the Scientific Committee on Consumer Safety (SCCS) Opinions on the fragrance ingredients Tagetes minuta and Tagetes patula extracts and essential oils (phototoxicity only) (SCCS/1551/15) (https://ec.europa.eu/health/scientific_committees/consumer_safety/docs/sccs_o_172.pdf).

The Expert Panel for Fragrance Safety reviewed the SCCS Opinion SCCS/1551/15 for Tagetes minuta and Tagetes Patula and recommends the limits for the 12 different product categories, which are the acceptable use levels of Tagetes minuta and Tagetes Patula in the various product categories.

Tagetes oil and absolute

In addition, they recommend to use Tagetes minuta and Tagetes Patula according to the its specification above mentioned.

The Prohibition of this Standard is based on the Scientific Committee on Consumer Products (SCCP) Opinion on Tagetes erecta, T. minuta and T. patula Extracts and Oils (phototoxicity only) (SCCP/0869/05)
(https://ec.europa.eu/health/ph_risk/committees/04_sccp/docs/sccp_o_025d.pdf).
The Expert Panel for Fragrance Safety recommends not to use Tagetes erecta in any finished product application.

REFERENCES:

The IFRA Standard Tagetes oil and absolute is based on at least one of the following publications:

• The RIFM Safety Assessment on Tagetes oil and absolute is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014).
(http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308.
(https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Letizia C.S. and Api A.M (2000). A dermal safety evaluation of extracts from Tagetes plants used in fragrances. The Toxicologist, 54(1), 397.

• Research Institute for Fragrance Materials, Inc. (1985a). Guinea Pig Phototoxicity Test. Unpublished report from Givaudan. Report number 3361, 17 December.

• Research Institute for Fragrance Materials, Inc. (1985b). Guinea Pig Phototoxicity Test. Unpublished report from Givaudan. Report number 3362, 17 December.

• Research Institute for Fragrance Materials, Inc. (1986a). Human Photosensitization Test. RIFM report number 1690, 21 November.

• Research Institute for Fragrance Materials, Inc. (1986b). Mouse Phototoxicity Test. RIFM report

Tagetes oil and absolute

number 3828, 25 June.

• Research Institute for Fragrance Materials, Inc. (1986c). Mouse Phototoxicity Test. RIFM report number 4343, 31 July.

• Scientific Committee on Consumer Safety (SCCS) Opinions on the fragrance ingredients Tagetes minuta and Tagetes patula extracts and essential oils (phototoxicity only) (SCCS/1551/15) (https://ec.europa.eu/health/scientific_committees/consumer_safety/docs/sccs_o_172.pdf).

• Scientific Committee on Consumer Products (SCCP) Opinion on Tagetes erecta, T. minuta and T. patula Extracts and Oils (phototoxicity only) (SCCP/0869/05) (https://ec.europa.eu/health/ph_risk/committees/04_sccp/docs/sccp_o_025d.pdf).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Tea leaf absolute

CAS-No.:	84650-60-2 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	Not applicable.
Synonyms:	Camellia sinensis leaf extract Tea, ext. Tea sinensis absolute Thea chinensis ext. Thea sinensis ext.		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2006

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.037 %	Category 7A	0.42 %
Category 2	0.011 %	Category 7B	0.42 %
Category 3	0.22 %	Category 8	0.022 %
Category 4	0.21 %	Category 9	0.40 %
Category 5A	0.052 %	Category 10A	1.4 %

Tea leaf absolute

Category 5B	0.052 %	Category 10B	1.4 %
Category 5C	0.052 %	Category 11A	0.80 %
Category 5D	0.052 %	Category 11B	0.80 %
Category 6	0.12 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Tea leaf absolute

Additional information is available in the RIFM safety assessment for Tea leaf absolute, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Tea leaf absolute and recommends the limits for the 12 different product categories, which are the acceptable use levels of Tea leaf absolute in the various product categories.

REFERENCES:

The IFRA Standard on Tea leaf absolute is based on at least one of the following publications:

• The RIFM Safety Assessment on Tea leaf absolute if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

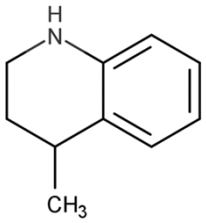
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

1,2,3,4-Tetrahydro-4-methylquinoline

CAS-No.:	19343-78-3 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{10}H_{13}N$
		Structure:	
Synonyms:	4-Methyl-1,2,3,4-tetrahydroquinoline Quinoline, 1,2,3,4-tetrahydro-4-methyl- 1,2,3,4-Tetrahydrolepidine 1,2,3,4-Tetrahydro-4-methylquinoline		

History:	Publication date:	2009 (Amendment 44)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	August 7, 2009
	For existing fragrance compounds*:	August 7, 2010
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**SPECIFICATION**

FRAGRANCE INGREDIENT SPECIFICATION:	The material has been identified for having the potential of forming nitrosamines in nitrosating systems. Downstream users therefore have to be notified of the presence of the material and its potential, to be able to consider adequate protective measures.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in

1,2,3,4-Tetrahydro-4-methylquinoline

	products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**POTENTIAL OF NITROSAMINE FORMATION**

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 1,2,3,4-Tetrahydro-4-methylquinoline. Based on their expert judgement, they recommend to use the fragrance ingredient according to its specification mentioned above.

REFERENCES:

The IFRA Standard on 1,2,3,4-Tetrahydro-4- methylquinoline is based on at least one of the following publications:

• The RIFM Safety Assessment on 1,2,3,4-Tetrahydro-4- methylquinoline if available at the RIFM Safety Assessment Sheet Database:
http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014).
(http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2:

1,2,3,4-Tetrahydro-4-methylquinoline

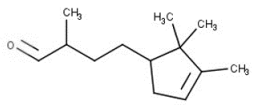
Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

• Nitrosamine policy as contained in the EU Cosmetics Directive 76/768/EEC and its Amendments.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

α,2,2,3-Tetramethylcyclopent-3-ene-1-butyraldehyde

CAS-No.:	65114-03-6 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{13}H_{22}O$
		Structure:	
Synonyms:	2-Methyl-4-(2,2,3-trimethylcyclopent-3-en-1-yl)butanal 3-Cyclopentene-1-butanal, α,2,2,3-tetramethyl- Florenza (commercial name) Santafleur (commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.038 %	Category 7A	0.44 %
Category 2	0.011 %	Category 7B	0.44 %
Category 3	0.23 %	Category 8	0.023 %
Category 4	0.21 %	Category 9	0.42 %
Category 5A	0.054 %	Category 10A	1.5 %
Category 5B	0.054 %	Category 10B	1.5 %

α,2,2,3-Tetramethylcyclopent-3-ene-1-butyraldehyde

Category 5C	0.054 %	Category 11A	0.83 %
Category 5D	0.054 %	Category 11B	0.83 %
Category 6	0.13 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for α,2,2,3-Tetramethylcyclopent-3-ene-1-butyraldehyde, which can be downloaded from the RIFM Safety

α,2,2,3-Tetramethylcyclopent-3-ene-1-butyraldehyde

Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for α,2,2,3-Tetramethylcyclopent-3-ene-1-butyraldehyde and recommends the limits for the 12 different product categories, which are the acceptable use levels of α,2,2,3-Tetramethylcyclopent-3-ene-1-butyraldehyde in the various product categories.

REFERENCES:

The IFRA Standard on α,2,2,3-Tetramethylcyclopent-3-ene-1-butyraldehyde is based on at least one of the following publications:

• The RIFM Safety Assessment on α,2,2,3-Tetramethylcyclopent-3-ene-1-butyraldehyde if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

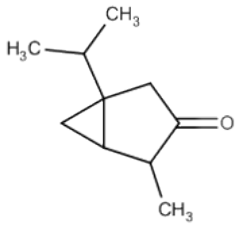
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Thujone

CAS-No.:	546-80-5 471-15-8 76231-76-0 1125-12-8 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{10}H_{16}O$
		Structure:	
Synonyms:	1-Isopropyl-4-methylbicyclo[3.1.0]hexan-3-one 3-Thujanone, (1s,4r,5r)-(-)- α-Thujone β-Thujone		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.11 %	Category 7A	0.24 %
Category 2	0.21 %	Category 7B	0.24 %
Category 3	0.032 %	Category 8	0.0053 %
Category 4	1.4 %	Category 9	0.13 %
Category 5A	0.095 %	Category 10A	0.13 %

Thujone

Category 5B	0.032 %	Category 10B	0.22 %
Category 5C	0.016 %	Category 11A	0.0053 %
Category 5D	0.0053 %	Category 11B	0.0053 %
Category 6	0.095 %	Category 12	9.5 %

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**SEE ANNEX I**

ANNEX I

Natural Complex Substances (NCS) containing Thujone

Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
50	546-80-5	Armoise vulgaris oil	Artemisia vulgaris L.	68991-20-8	E2.12
7.5	471-15-8	Armoise vulgaris oil	Artemisia vulgaris L.	68991-20-8	E2.12
50	546-80-5	Artemesia afra oil	Artemesia afra L. Jacq. Ex Willd.	91745-71-0	E2.12
10	471-15-8	Artemesia afra oil	Artemesia afra L. Jacq. Ex Willd.	91745-71-0	E2.12
0.1	546-80-5	Artemisia arborescens extract	Artemisia arborescens L.	92113-09-2	E2.13
39	546-80-5	Artemisia herba-alba oil	Artemesia herba alba Asso	84775-75-7	E2.12
10	471-15-8	Artemisia herba-alba oil	Artemesia herba alba Asso	84775-75-7	E2.12
55	546-80-5	Cedar leaf oil	Thuja occidentalis L.	8007-20-3	E2.12
10	471-15-8	Cedar leaf oil	Thuja occidentalis L.	8007-20-3	E2.12
2.3	546-80-5	Cedar leaf oil, China	Platycladus orientalis (L.)	91770-83-0	E2.12

Thujone

			Franco		
10	471-15-8	Cedar leaf oil, China	Platycladus orientalis (L.) Franco	91770-83-1	E2.12
0.2	546-80-5	Hyssop oil	Hyssopus officinalis L.	8006-83-5	E2.12
0.2	471-15-8	Hyssop oil	Hyssopus officinalis L.	8006-83-5	E2.12
0.05	471-15-8	Juniper berry oil	Juniperus communis L.	8002-68-4	G2.12
7.1	546-80-5	Mentha longifolia oil	Mentha longifolia (L.) Huds.	90063-99-3	E2.12
1	471-15-8	Mentha longifolia oil	Mentha longifolia (L.) Huds.	90063-99-3	E2.12
0.2	471-15-8	Olibanum absolute	Boswellia spp.	8016-36-2	K2.1
0.4	471-15-8	Olibanum carterii oil	Boswellia carterii	8016-36-2	K2.12
0.1	546-80-5	Olibanum oil	Boswellia spp.	8016-36-2	K2.12
0.4	471-15-8	Olibanum oil	Boswellia spp.	8016-36-2	K2.12
0.1	546-80-5	Olibanum sacra oil	Boswellia sacra	89957-98-2	K2.12
0.2	471-15-8	Olibanum sacra oil	Boswellia sacra	89957-98-2	K2.12
25	546-80-5	Sage Dalmatian oil	Salvia officinalis L.	8022-56-8	E2.12
8	471-15-8	Sage Dalmatian oil	Salvia officinalis L.	8022-56-8	E2.12
7.3	546-80-5	Sage Dalmatian oleoresin	Salvia officinalis L.	84082-79-1	E2.21
2.7	471-15-8	Sage Dalmatian oleoresin	Salvia officinalis L.	84082-79-1	E2.21
0.01	546-80-5	Sage oil, Spanish	Salvia lavandifolia Vahl	8022-56-8	E2.12
0.1	471-15-8	Sage oil, Spanish	Salvia lavandifolia Vahl	8022-56-8	E2.12
7.5	546-80-5	Sage oleoresin	Salvia officinalis L.	8022-56-8	E2.21
2.5	471-15-8	Sage oleoresin	Salvia officinalis L.	8022-56-8	E2.21
1.5	546-80-5	Savory summer oil	Satureja hortensis L.	8016-68-0	E2.12
0.5	471-15-8	Savory summer oil	Satureja hortensis L.	8016-68-0	E2.12
0.17	546-80-5	Spruce oil, Black	Picea mariana (Mill.) Britton	8008-80-8	E2.12
0.5	471-15-8	Tagetes erecta oil	Tagetes erecta L.	8016-84-0	E2.12
0.5	546-80-5	Tansy oil	Tanacetum vulgare L.	8016-87-3	F2.12
71	471-15-8	Tansy oil	Tanacetum vulgare L.	8016-87-3	F2.12
0.2	471-15-8	Thyme oil, wild	Thymus serpyllum L.	8007-46-3	E2.12
3	546-80-5	Wormwood oil	Artemisia absinthium L.	8008-93-3	E2.12

Thujone

42	471-15-8	Wormwood oil	Artemisia absinthium L.	8008-93-3	E2.12
2	546-80-5	Yarrow oil	Achillea millefolium L.	8022-07-9	E2.12
0.6	471-15-8	Yarrow oil	Achillea millefolium L.	8022-07-9	E2.12
57.5	76231-76-0; 1125-12-8	Armoise vulgaris oil	Artemisia vulgaris L.	68991-20-8	E2.12
60	76231-76-0; 1125-12-8	Artemesia afra oil	Artemesia afra L. Jacq. Ex Willd.	91745-71-0	E2.12
49	76231-76-0; 1125-12-8	Artemisia herba-alba oil	Artemesia herba alba Asso	84775-75-7	E2.12
65	76231-76-0; 1125-12-8	Cedar leaf oil	Thuja occidentalis L.	8007-20-3	E2.12
12.3	76231-76-0; 1125-12-8	Cedar leaf oil, China	Platycladus orientalis (L.) Franco	91770-83-1	E2.12
0.4	76231-76-0; 1125-12-8	Hyssop oil	Hyssopus officinalis L.	8006-83-5	E2.12
8.1	76231-76-0; 1125-12-8	Mentha longifolia oil	Mentha longifolia (L.) Huds.	90063-99-3	E2.12
0.5	76231-76-0; 1125-12-8	Olibanum oil	Boswellia spp.	8016-36-2	K2.12
0.3	76231-76-0; 1125-12-8	Olibanum sacra oil	Boswellia sacra	89957-98-2	K2.12
33	76231-76-0; 1125-12-8	Sage Dalmatian oil	Salvia officinalis L.	8022-56-8	E2.12
10	76231-76-0; 1125-12-8	Sage Dalmatian oleoresin	Salvia officinalis L.	84082-79-1	E2.21
0.11	76231-76-0; 1125-12-8	Sage oil, Spanish	Salvia lavandifolia Vahl	8022-56-8	E2.12
10	76231-76-0; 1125-12-8	Sage oleoresin	Salvia officinalis L.	8022-56-8	E2.21
2	76231-76-0; 1125-12-8	Savory summer oil	Satureja hortensis L.	8016-68-0	E2.12
71.5	76231-76-0; 1125-12-8	Tansy oil	Tanacetum vulgare L.	8016-87-3	F2.12
45	76231-76-0; 1125-12-8	Wormwood oil	Artemisia absinthium L.	8008-93-3	E2.12
2.6	76231-76-0; 1125-12-8	Yarrow oil	Achillea millefolium L.	8022-07-9	E2.12

The natural contribution of Thujone is determined by the sum of the natural contributions of each of its isomers.

This is a non-exhaustive indicative list of typical natural presence for Thujone and is intended to be used in the absence of own analytical data. If analysis has shown that the level of the restricted ingredient in a natural complex substance is different from what is provided in this Annex I, then the analytically determined level should be used in place of the indicative level.

It should further be noted that natural complex substances themselves can be restricted by an IFRA Standard.

For a detailed list of natural contributions, please refer to the Annex I of IFRA Standards, publicly available on the IFRA website (www.ifrafragrance.org).

INTRINSIC PROPERTY DRIVING RISK **NEUROTOXICITY**

Thujone

MANAGEMENT:

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Thujone, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Thujone and recommends the limits for the 12 different product categories, which are the acceptable use levels of Thujone in the various product categories.

REFERENCES:

The IFRA Standard on Thujone is based on at least one of the following publications:

• The RIFM Safety Assessment on Thujone if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

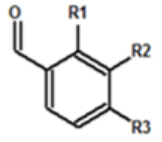
• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Thujone

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

o,m,p-Tolualdehydes and their mixtures

CAS-No.:	529-20-4 620-23-5 104-87-0 1334-78-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.	**Molecular formula:**	C_8H_8O
		Structure:	 With R_1=Me, R_2=H, R_3=H or R_1=H, R_2=Me, R_3=H or R_1=H, R_2=H, R_3=Me
Synonyms:	529-20-4: 2-Tolualdehyde ortho-Tolualdehyde 2-Methylbenzaldehyde 620-23-4: meta-Tolualdehyde 3-Methyl-benzaldehyde Benzaldehyde, 3-methyl- 104-87-0: para-Tolualdehyde 4-Methyl-benzaldehyde Benzaldehyde, 4-methyl- Tolyl Aldehyde Para Extra (commercial name) 1334-78-7: Benzaldehyde, methyl- o,m,p-Methyl-benzaldehydes Methylbenzaldehyde (mixed 2,3,4) Tolualdehydes (mixed o,m,p) Tolualdehyde Toluic aldehyde (mixed 2,3,4)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2013

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

o,m,p-Tolualdehydes and their mixtures

RECOMMENDATION:	RESTRICTION

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.085 %	Category 7A	0.96 %
Category 2	0.025 %	Category 7B	0.96 %
Category 3	0.51 %	Category 8	0.050 %
Category 4	0.47 %	Category 9	0.92 %
Category 5A	0.12 %	Category 10A	3.3 %
Category 5B	0.12 %	Category 10B	3.3 %
Category 5C	0.12 %	Category 11A	1.8 %
Category 5D	0.12 %	Category 11B	1.8 %
Category 6	0.28 %	Category 12	No Restriction

Fragrance ingredient restriction - Note box
The above limits apply to ortho-, meta- and para-Tolualdehyde used individually or in combination.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE

o,m,p-Tolualdehydes and their mixtures

	GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for o,m,p-Tolualdehydes and their mixtures, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for o,m,p-Tolualdehydes and their mixtures and recommends the limits for the 12 different product categories, which are the acceptable use levels of o,m,p-Tolualdehydes and their mixtures in the various product categories.

REFERENCES:

The IFRA Standard on o,m,p-Tolualdehydes and their mixtures is based on at least one of the following publications:

• The RIFM Safety Assessment on o,m,p-Tolualdehydes and their mixtures if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

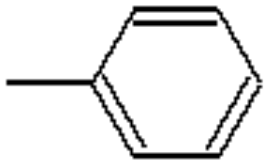
o,m,p-Tolualdehydes and their mixtures

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Toluene

CAS-No.:	108-88-3 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	C_7H_8
		Structure:	
Synonyms:	Toluol Methylbenzol Methylbenzene		

History:	Publication date:	2004 (Amendment 38)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	May 6, 2004
	For existing fragrance compounds*:	May 6, 2005
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**PROHIBITION / SPECIFICATION**

FRAGRANCE INGREDIENT PROHIBITION:	Toluene should not be used as a fragrance ingredient.

FRAGRANCE INGREDIENT SPECIFICATION:	The level of Toluene has to be kept as low as practicable and should never exceed 100 ppm in the fragrance compound/mixture or fragrance oil.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE**

Toluene

	SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	LIVER TOXICITY

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Toluene and recommends not to use Toluene as or in fragrance ingredients in any finished product application other than described in the above fragrance ingredient specification.

REFERENCES:

The IFRA Standard on Toluene is based on at least one of the following publications:

• The RIFM Safety Assessment on Toluene is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (doi: 10.1016/j.fct.2014.11.014). (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308. (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

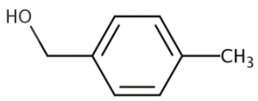
• Cosmetic Ingredient Review, Journal of the American College of Toxicology JACT 6 (1) 1987.

• IARC (International Agency for Research on Cancer) Monographs Vol 47, p .79 (1989); Vol 71 p. 829 (1999).

Toluene

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

p-Tolyl alcohol

CAS-No.:	589-18-4 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_8H_{10}O$
		Structure:	
Synonyms:	(4-Methylphenyl)methanol Benzenemethanol, 4-methyl- p-Methylbenzyl alcohol p-Tolualcohol 4-(Hydroxymethyl)toluene 4-Methylbenzyl alcohol 4-Tolylcarbinol		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.048 %	Category 7A	0.048 %
Category 2	0.048 %	Category 7B	0.048 %
Category 3	0.048 %	Category 8	0.016 %
Category 4	1.5 %	Category 9	0.53 %
Category 5A	0.64 %	Category 10A	0.53 %

p-Tolyl alcohol

Category 5B	0.048 %	Category 10B	0.048 %
Category 5C	0.048 %	Category 11A	0.016 %
Category 5D	0.016 %	Category 11B	0.016 %
Category 6	0.048 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION AND SYSTEMIC TOXICITY**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

p-Tolyl alcohol

Additional information is available in the RIFM safety assessment for p-Tolyl alcohol, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for p-Tolyl alcohol and recommends the limits for the 12 different product categories, which are the acceptable use levels of p-Tolyl alcohol in the various product categories.

REFERENCES:

The IFRA Standard on p-Tolyl alcohol is based on at least one of the following publications:

• The RIFM Safety Assessment on p-Tolyl alcohol if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Treemoss extracts

CAS-No.:	90028-67-4 68648-41-9 68917-40-8 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.	**Molecular formula:**	Not applicable.
Synonyms:	Treemoss absolute (Pseudevernia furfuracea) Treemoss (Usnea furfuracea) Treemoss colourless Pseudevernia furfuracea extract Cedar moss		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1991 2001 2008

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION / SPECIFICATION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.020 %	Category 7A	0.10 %
Category 2	0.016 %	Category 7B	0.10 %
Category 3	0.10 %	Category 8	0.032 %
Category 4	0.10 %	Category 9	0.10 %

Treemoss extracts

Category 5A	0.076 %	Category 10A	0.10 %
Category 5B	0.076 %	Category 10B	0.10 %
Category 5C	0.076 %	Category 11A	0.10 %
Category 5D	0.076 %	Category 11B	0.10 %
Category 6	0.18 %	Category 12	No Restriction

Fragrance ingredient restriction - Note box

For Treemoss and Oakmoss extracts, the restrictions in the Standards are directly linked to the presence of Atranol and Chloroatranol in the finished products. To ensure that those remain below trace levels, the upper concentration levels have not been increased (compared its last publication in the Amendment 43 (2008)).

In the presence of Oakmoss extracts, the level of Treemoss in the respective category has to be reduced accordingly, such that the total amount of both extracts does not exceed the maximum permitted level in each category as listed in the table above.
If the same fragrance mixture is intended to be used in more than one IFRA Category, then the most restrictive limitation (based on foreseen use concentrations and maximum permitted level) will apply.

FRAGRANCE INGREDIENT SPECIFICATION:	Treemoss extracts shall not contain more than 0.8% of Dehydroabietic acid (DHA) as a marker of 2% of total resin acids. The concentration of DHA (about 40% of the total resin acids) in Treemoss can be measured with an High Performance Liquid Chromatography (HPLC) reverse phase - spectrofluorometry method. Further, levels of Atranol and Chloroatranol should each be below 100 ppm in Treemoss extracts.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

Treemoss extracts

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Treemoss extracts, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Treemoss extracts and recommends the limits for the 12 different product categories, which are the acceptable use levels of Treemoss extracts in the various product categories.
In addition, they recommend to use Treemoss extracts according to the specification above mentioned.

REFERENCES:

The IFRA Standard on Treemoss extracts is based on at least one of the following publications:

• The RIFM Safety Assessment on Treemoss extracts if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D.,

Treemoss extracts

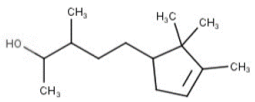
Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

5-(2,2,3-Trimethyl-3-cyclopentenyl)-3-methylpentan-2-ol

CAS-No.:	65113-99-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{14}H_{26}O$
		Structure:	
Synonyms:	3-Cyclopentene-1-butanol, .α.,.β.,2,2,3-pentamethyl- 3-Methyl-5-(2,2,3-trimethylcyclopent-3-en-1-yl)pentan-2-ol a,b,2,2,3-Pentamethylcyclopent-3-ene-1-butanol Sandal Series G (Commercial name) Sandalore (Commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.21 %	Category 7A	2.4 %
Category 2	0.062 %	Category 7B	2.4 %
Category 3	1.2 %	Category 8	0.12 %
Category 4	1.2 %	Category 9	2.3 %
Category 5A	0.29 %	Category 10A	8.1 %

5-(2,2,3-Trimethyl-3-cyclopentenyl)-3-methylpentan-2-ol

Category 5B	0.29 %	Category 10B	8.1 %
Category 5C	0.29 %	Category 11A	4.5 %
Category 5D	0.29 %	Category 11B	4.5 %
Category 6	0.68 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

5-(2,2,3-Trimethyl-3-cyclopentenyl)-3-methylpentan-2-ol

Additional information is available in the RIFM safety assessment for 5-(2,2,3-Trimethyl-3-cyclopentenyl)-3-methylpentan-2-ol, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 5-(2,2,3-Trimethyl-3-cyclopentenyl)-3-methylpentan-2-ol and recommends the limits for the 12 different product categories, which are the acceptable use levels of 5-(2,2,3-Trimethyl-3-cyclopentenyl)-3-methylpentan-2-ol in the various product categories.

REFERENCES:

The IFRA Standard on 5-(2,2,3-Trimethyl-3-cyclopentenyl)-3-methylpentan-2-ol is based on at least one of the following publications:

• The RIFM Safety Assessment on 5-(2,2,3-Trimethyl-3-cyclopentenyl)-3-methylpentan-2-ol if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

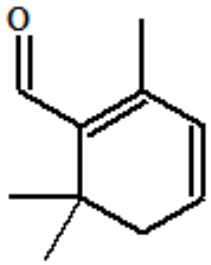
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

2,6,6-Trimethylcyclohex-1,3-dienyl methanal

CAS-No.:	116-26-7 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{10}H_{14}O$
		Structure:	
Synonyms:	2,6,6-Trimethylcyclohexa-1,3-diene-1-carbaldehyde 2,6,6-Trimethyl-1,3-cyclohexadienal 2,6,6-Trimethyl-1,3-cyclohexadien-1-carboxaldehyde 1,1,3-Trimethyl-2-formylcyclohexa-2,4-diene Dehydro-β-cyclocitral Safranal (commercial name)		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1998 2013

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.0022 %	Category 7A	0.025 %
Category 2	0.00066 %	Category 7B	0.025 %
Category 3	0.013 %	Category 8	0.0013 %
Category 4	0.012 %	Category 9	0.024 %

2,6,6-Trimethylcyclohex-1,3-dienyl methanal

Category 5A	0.0032 %	Category 10A	0.087 %
Category 5B	0.0032 %	Category 10B	0.087 %
Category 5C	0.0032 %	Category 11A	0.048 %
Category 5D	0.0032 %	Category 11B	0.048 %
Category 6	0.0073 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

2,6,6-Trimethylcyclohex-1,3-dienyl methanal has been found in natural extracts but only at trace levels.

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is

2,6,6-Trimethylcyclohex-1,3-dienyl methanal

derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 2,6,6-Trimethylcyclohex-1,3-dienyl methanal, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 2,6,6-Trimethylcyclohex-1,3-dienyl methanal and recommends the limits for the 12 different product categories, which are the acceptable use levels of 2,6,6-Trimethylcyclohex-1,3-dienyl methanal in the various product categories.

REFERENCES:

The IFRA Standard on 2,6,6-Trimethylcyclohex-1,3-dienyl methanal is based on at least one of the following publications:

• The RIFM Safety Assessment on 2,6,6-Trimethylcyclohex-1,3-dienyl methanal if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

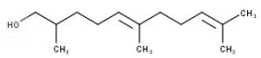
• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

2,6,10-Trimethylundeca-5,9-dien-1-ol

CAS-No.:	24048-14-4 185019-19-6 58001-88-0 58001-87-9 1373932-23-0 1018832-07-9 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.	**Molecular formula:**	$C_{14}H_{26}O$
		Structure:	
Synonyms:	24048-14-4: 2,6,10-Trimethylundeca-5,9-dienol 5,9-Undecadien-1-ol, 2,6,10-trimethyl- Dihydroapofarnesol Profarnesol 185019-19-6 and 58001-88-0: (E)-2,6,10-Trimethylundeca-5,9-dien-1-ol 58001-87-9: (Z)-2,6,10-Trimethylundeca-5,9-dien-1-ol 1373932-23-0: (2R,5E)-2,6,10-Trimethylundeca-5,9-dien-1-ol 1018832-07-9: (2S, 5E)-2,6,10-Trimethylundeca-5,9-dien-1-ol		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	Not applicable.

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

2,6,10-Trimethylundeca-5,9-dien-1-ol

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.21 %	Category 7A	2.4 %
Category 2	0.062 %	Category 7B	2.4 %
Category 3	1.2 %	Category 8	0.12 %
Category 4	1.2 %	Category 9	2.3 %
Category 5A	0.29 %	Category 10A	8.1 %
Category 5B	0.29 %	Category 10B	8.1 %
Category 5C	0.29 %	Category 11A	4.5 %
Category 5D	0.29 %	Category 11B	4.5 %
Category 6	0.68 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

2,6,10-Trimethylundeca-5,9-dien-1-ol has been reported to be found in natural extracts but only at trace levels.

2,6,10-Trimethylundeca-5,9-dien-1-ol

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 2,6,10-Trimethylundeca-5,9-dien-1-ol, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 2,6,10-Trimethylundeca-5,9-dien-1-ol and recommends the limits for the 12 different product categories, which are the acceptable use levels of 2,6,10-Trimethylundeca-5,9-dien-1-ol in the various product categories.

REFERENCES:

The IFRA Standard on 2,6,10-Trimethylundeca-5,9-dien-1-ol is based on at least one of the following publications:

• The RIFM Safety Assessment on 2,6,10-Trimethylundeca-5,9-dien-1-ol if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials

2,6,10-Trimethylundeca-5,9-dien-1-ol

for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Verbena oil and absolute (Lippia citriodora Kunth.)

CAS-No.:	8024-12-2 85116-63-8 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.	**Molecular formula:**	Not applicable.
Synonyms:	Prohibition of Verbena oils: Lippia citriodora oils Restriction of Verbena absolutes: Lippia citriodora absolute Verbena absolute Aloysia triphylla absolute Lippia triphylla absolute Verbena triphylla absolute Zappania citrodora absolute		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1987 2010

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION / PROHIBITION**

FRAGRANCE INGREDIENT PROHIBITION:	Verbena oils from Lippia citriodora Kunth. should not be used as a fragrance ingredient, based on its sensitizing and phototoxic potential.

Verbena oil and absolute (Lippia citriodora Kunth.)

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.12 %	Category 7A	1.4 %
Category 2	0.037 %	Category 7B	1.4 %
Category 3	0.74 %	Category 8	0.072 %
Category 4	0.69 %	Category 9	1.3 %
Category 5A	0.17 %	Category 10A	4.8 %
Category 5B	0.17 %	Category 10B	4.8 %
Category 5C	0.17 %	Category 11A	2.7 %
Category 5D	0.17 %	Category 11B	2.7 %
Category 6	0.40 %	Category 12	No Restriction

Fragrance ingredient restriction - Note box

The Standard is set due to the phototoxic effects of Verbena oil and absolute (Lippia citriodora Kunth.). For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the Guidance for the use of IFRA Standards.

Only Verbena absolutes from Lippia citriodora Kunth. can be used as a fragrance ingredient.

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

Verbena oil and absolute (Lippia citriodora Kunth.)

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	DERMAL SENSITIZATION, PHOTOTOXICITY

RIFM SUMMARIES:

Recommended concentration levels of Verbena absolute are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.
Additional information is available in the RIFM safety assessment for Verbena absolute, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Verbena absolute and recommends the limits for the 12 different product categories, which provide the acceptable use levels of Verbena absolute in the various product categories.
In addition, they recommend not to use Verbena oil in any finished product application.

REFERENCES:

The IFRA Standard on Verbena oil and absolute (Lippia citriodora Kunth.) is based on at least one of the following publications:

• The RIFM Safety Assessment on Verbena oil and absolute (Lippia citriodora Kunth.) if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-

Verbena oil and absolute (Lippia citriodora Kunth.)

2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

Ylang ylang extracts

CAS-No.:	8006-81-3 68606-83-7 83863-30-3 The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.	**Molecular formula:**	Not applicable.
Synonyms:	Cananga odorata (Lamark) (Hooker et Thompson) (Anonaceae) Cananga odorata extract Cananga odorata flower oil Cananga odorata oil Cananga oil Ylang ylang oil (Cananga odorata Hook. f. and Thomas) Ylang ylang oil extra Ylang ylang oil I Ylang ylang oil II Ylang ylang oil III Ylang ylang, Cananga odorata, ext.		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	2008

Implementation dates:	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	February 10, 2022
	*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.	

RECOMMENDATION:	**RESTRICTION**

RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.13 %	Category 7A	1.5 %
Category 2	0.039 %	Category 7B	1.5 %

Ylang ylang extracts

Category 3	0.78 %	Category 8	0.077 %
Category 4	0.73 %	Category 9	1.4 %
Category 5A	0.18 %	Category 10A	5.1 %
Category 5B	0.18 %	Category 10B	5.1 %
Category 5C	0.18 %	Category 11A	2.8 %
Category 5D	0.18 %	Category 11B	2.8 %
Category 6	0.43 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:	**NONE TO CONSIDER (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)**

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	**DERMAL SENSITIZATION**

RIFM SUMMARIES:

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be

Ylang ylang extracts

one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Ylang ylang extracts, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Ylang ylang extracts and recommends the limits for the 12 different product categories, which are the acceptable use levels of Ylang ylang extracts in the various product categories.

REFERENCES:

The IFRA Standard on Ylang ylang extracts is based on at least one of the following publications:

• The RIFM Safety Assessment on Ylang ylang extracts if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com

• Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. Food Chem Toxicol. 2015 Aug;82 Suppl:S1-S19 (http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf).

• IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.pdf).

• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. Environ Toxicol Chem. 2002;21:1301-1308 (https://www.ncbi.nlm.nih.gov/pubmed/12069318).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.

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